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BIRDS.—Vol. III.

BY

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PREFACE.

In the Preface to the second volume, a change in the original plan of the 'Birds' was announced. It was still proposed to complete the work in three volumes, but as the second was shorter than usual it was announced that the deficiency would be made good in the third, which would contain descriptions of all Indian birds except Passeres. As the work progressed, however, further modification became necessary, as it was evident that the proposed third volume would be of inconvenient size, and it has now been decided to divide it into two. The birds will therefore occupy four volumes instead of three, and of these the third is herewith published. The fourth volume is in preparation and a considerable portion is written. The publishing price of the last three is reduced, so that the cost of the whole work is only increased by a very small amount.

Mr. Oates, after writing the two volumes containing the descriptions of the Passeres, was obliged to return to his appointment in India, as explained in the Preface to the second volume. The continuation of the 'Birds' has been left in my hands, and I have endeavoured to keep the work uniform in general plan, and to render the change of authorship as little conspicuous as possible; but I fear there are many, besides myself, who will see cause for regret that the able ornithologist who commenced the work was prevented by circumstances from finishing it.

The birds of which descriptions appear in the present volume are the Eurylæmi, the various groups known collectively as Picarian or non-Passerine perching birds, the Parrots, and the nocturnal and diurnal Birds of Prey. Thus the first three volumes of the present work correspond to the first two of Jerdon's, and contain the same families of Birds, though differently arranged.

The question of the system to be employed in dividing the Birds of India into Orders did not present itself in the first two volumes, which were occupied by the Passeres, now regarded by all ornithologists as a distinct order, and the highest of the class. But in the present volume a general scheme of classification became a necessity: the arrangement hitherto adopted in the majority of works on Indian Ornithology—Legge's 'Birds of Ceylon' and Oates's 'Birds of Burmah' being the most important exceptions—has been that of Jerdon's great work, and was taken from G. R. Gray's, which again was but slightly modified from that of Cuvier. This classification, proposed in the early part of the present century, when the anatomy of birds had received but little attention, was founded exclusively on the characters of the beak and feet. It was soon found that there were defects in the Cuvierian system, one of the leaders in the path of reform being Edward Blyth, the pioneer of Indian scientific ornithology; but it was long before a satisfactory natural system could be devised, and even now birds are by no means so clearly arranged, or divided into orders so well defined, as mammals and reptiles are. Still some of the later attempts to arrange the intricate groups of birds have been fairly successful in consequence of their depending not on one or two characters but on several, of their taking into consideration both internal anatomy and external structure, and of their making use of such clues to affinity as are afforded by nidification, oology, and the changes of plumage in the young.

The system adopted in the present work is, in the main, identical with those of Sharpe and Gadow, and differs in no important point from the classifications of Sclater and Newton. References will be found on page 15. The chief difference between the plan here followed and those proposed by the ornithologists named, is that no attempt has been made in the present work to arrange in larger categories the groups here termed orders. This is due to the circumstance that there is a much wider general agreement as to the distinctness of the smaller ordinal or subordinal groups than as to their relations to each other.

The principal anatomical characters by which the different orders are distinguished are furnished by the bones of the palate, shoulder-girdle and sternum, and the vertebræ; by the occurrence of cæca in the intestines, the presence or absence of particular muscles in the thigh, and the characters of the deep plantar tendons. Amongst the external characters, pterylosis, or the disposition of the feathers with regard to the clad and naked tracts of the body (*pterylæ* and *apteria*), the presence or absence of an aftershaft on the body-feathers, the occurrence of down, the presence or absence of a uropygial oil-gland, and its being tufted, *i. e.* partially surrounded by a circlet of feathers, or naked, and the number of remiges and rectrices, are amongst the points of importance. Latterly, since the late Mr. R. S. Wray, in the 'Proceedings of the Zoological Society' for 1887, showed that, in several orders, the fifth secondary quill or cubital, counting from the distal extremity of the ulna, is wanting, some importance has been attached to the fact, and those birds have been termed quincubital which retain the remex in question, whilst those forms in which it is absent are distinguished as aquincubital.

Most of the terms employed are easily understood, but four diagrams are added for the explanation of the names applied to the bones of the palate and the muscles of the thigh. The two figures illustrative of the former, which are used by permission of their author, the late Professor Huxley, and are taken from his classical paper in the 'Proceedings of the Zoological Society' for 1867, serve to explain the two most important types of palatal structure in carinate birds—the "schizognathous" and "desmognathous." In the desmognathous palate the maxillo-palatines are united across the median line, and the vomer is either small and slender or rudimentary. In schizognathous skulls the maxillo-palatines are usually elongate and lamellar and do not unite either with the vomer or with each other. In both the vomer, if present, is pointed in front, not broadly truncated as in the ægithognathous type, represented by the Raven (Vol. I. p. 4). There are other distinctions in these three types of bony palate, but those mentioned are the most conspicuous. The fourth principal type, the dromæognathous, is not found in any Indian birds.

The muscles of the thigh are shown in the two figures taken from the works of Garrod and Forbes, the former of whom attached great importance to them as evidence of affinity. The 'ambiens' muscle was regarded by him as affording a clue to the whole system, and by means of it he divided all Carinate birds into Homalogonatæ, in which the muscle (with a few aberrant exceptions) was present, and the Anomalogonatæ, in which it was absent. The other thigh-muscles, to the presence or absence of which he attached importance, were the femoro-caudal, accessory femoro-caudal, semitendinosus, and accessory semitendinosus.

The parts of the sternum occasionally mentioned in the descriptions of orders are well known, with perhaps the exception of the manubrium or manubrial process, called by some writers the rostrum. This is a simple or compound process, projecting forward at the middle of the anterior border, just where the keel of the sternum joins the body, and in front of the inner terminations of the coracoids. It comprises a distal spine (*spina externa*) and a proximal one (*spina interna*), either of which may be wanting. The *spina externa* is either simple or forked.

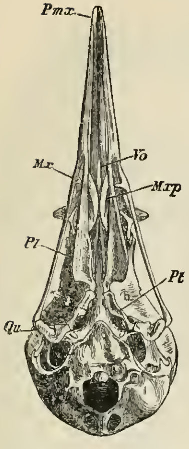
The descriptions in this, as in other volumes of the Fauna of British India, are taken from the magnificent series of Indian Birds in the British Museum (Natural History), and every facility and assistance has been afforded to Mr. Oates and myself by Sir W. H. Flower, the Director of the Natural History Museum, and Dr. A. Günther, Keeper of the Department of Zoology. Especially we are under the greatest obligations to the officers in charge of the bird collection, Dr. R. B. Sharpe and Mr. W. R. Ogilvie Grant, for aid of every kind most freely and kindly afforded during the progress of the present work. Mr. Oates, when he left England, made over to me all the notes he had prepared for the continuation of the work, and they have been of very great service. I have also to express my obligations to Dr. J. A. Waddell for a proof in advance of his excellent notes on Sikhim birds prepared for the 'Gazetteer' of that province; to Col. C. T. Bingham and Mr. Hauxwell for information about Burmese species; and to Dr. Warth and Mr. W. M. Daly for lists of birds obtained in the Shevroy Hills.

Whilst I regret that this is not the last of the series of volumes containing the descriptions of Indian Vertebrata, I hope the final part will not be long delayed.

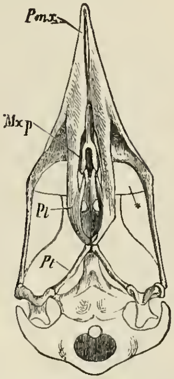
W. T. BLANFORD.

August 1st, 1895.

Figures to illustrate Structure of Palate.



Under view of the skull of *Charadrius pluvialis*, to illustrate the schizognathous type of palate.



Under view of the skull of *Cuculus canorus*, to illustrate the desmognathous type of palate.

These two figures are copied by permission from the late Prof. Huxley's paper on the Classification of Birds (P. Z. S. 1867, pp. 427, 444).—*Pmx*, the premaxilla; *Mx*, the maxilla; *Mxp*, its maxillo-palatine process; *Pl*, the palatine bone; *Vo*, the vomer; *Pt*, the pterygoid; *Qu*, the quadrate bone; × the basipterygoid process; * the prefrontal process.

"In the large assemblage of birds belonging to the Cuvierian orders Gallinæ, Grallæ, and Natatores, which may be termed *Schizognathous*, the vomer, sometimes large and sometimes very small, always tapers to a point anteriorly; while posteriorly it embraces the basisphenoidal rostrum, between the palatines.

"The maxillo-palatines are usually elongated and lamellar; they pass inwards over the anterior processes of the palatine bones, with which they become united, and then bending backwards, along the inner edge of the palatines, leave a broader or a narrower fissure between themselves and the vomer and do not unite with it or with one another."—Huxley, P. Z. S. 1867, p. 426.

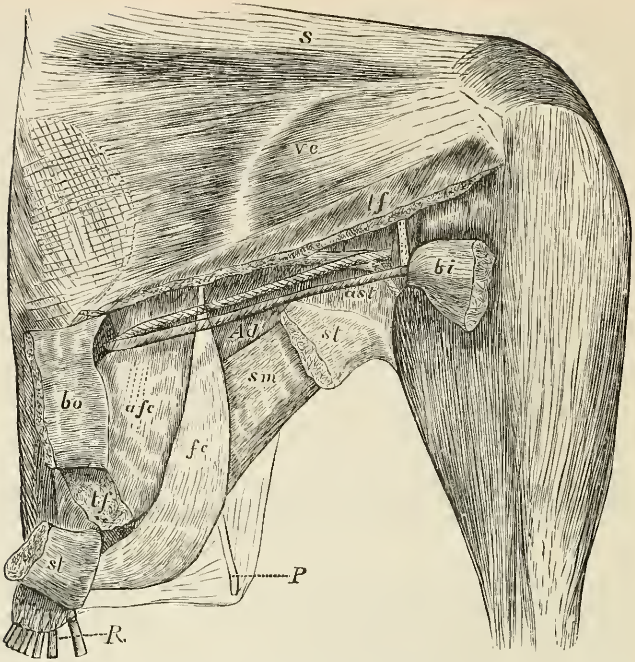
"In *Desmognathous* birds the vomer is often either abortive, or so small that it disappears from the skeleton. When it exists it is always slender and tapers to a point anteriorly.

"The maxillo-palatines are united across the middle line, either directly or by the intermediation of ossifications in the nasal septum.

"The posterior ends of the palatines and the anterior ends of the pterygoids articulate directly with the rostrum, as in the preceding division" [and not with the diverging posterior ends of the vomer as in Dromæognathous birds and generally in Ratitæ].—Huxley, *l. c.* p. 435.

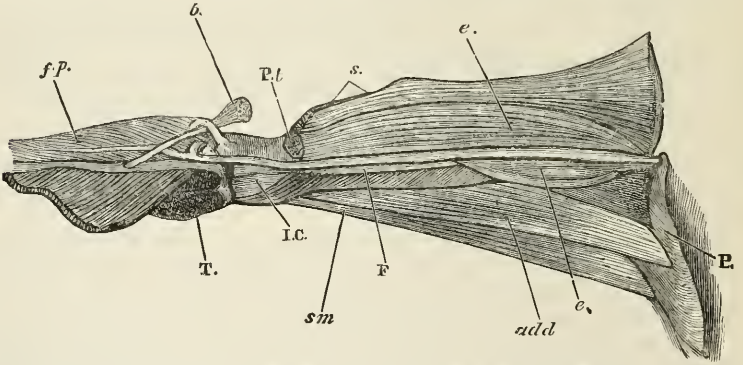
In the *Ægithognathous* type of palate (figured Vol. I. of the present work, p. 4), "the vomer is a broad bone, abruptly truncated in front, and deeply cleft behind, embracing the rostrum of the sphenoid between its forks. The palatines have produced postero-external angles. The maxillo-palatines are slender at their origin, and extend inwards and backwards obliquely over the palatines, ending beneath the vomer in expanded extremities, which do not become united by bone, either with one another or with the vomer."—Huxley, *l. c.* p. 450.

Figures to illustrate Muscles of Thigh.



Outer view of right thigh of Common Fowl, partially dissected. (Copied from Garrod's figure, P. Z. S. 1873, p. 627.)

s, sartorius; *ve*, vastus externus; *bo* and *bi*, biceps, origin and insertion; *tf*, tensor fasciæ (gluteus primus); *fc*, femoro-caudal; *afc*, accessory femoro-caudal; *st*, semitendinosus; *ast*, accessory semitendinosus; *sm*, semimembranosus; *Ad*, adductor; *P*, pubis; *R*, rectrices.



Thigh of Touraco (*Corythaix*) viewed from the inner side, to show the ambiens muscle, arising from the prepubic side of the pelvis (P) and running along to blend with one of the tendons of origin of the flexor perfor. digitorum (*f.p.*).—F, femur; *Pt*, patella; I.C., inner condyle of femur; T, tibia; *b*, biceps (cut short); *s*, sartorius (also cut); *e*, *e*, extensor femoris; *sm*, semimembranosus; *add*, adductores.

N.B.—The surrounding parts have been somewhat distorted from their natural positions to show better the course of the ambiens. (Copied from Forbes's figure, Ibis, 1881, p. 9.)

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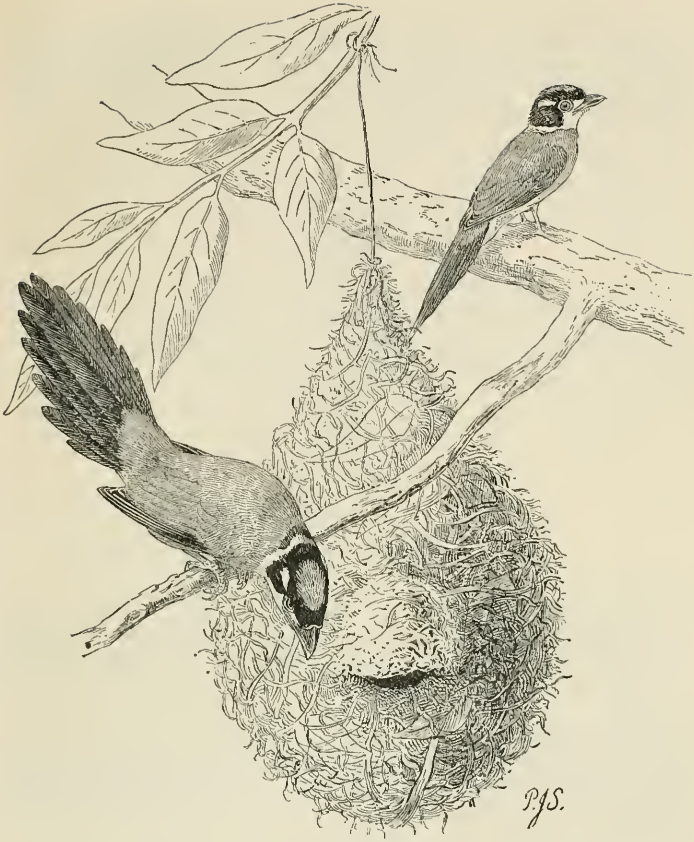

Fig. 1.—*Psarisomus dalhousiæ* and nest (from Hodgson's drawing).

Order II. EURYLÆMI.

Palate ægithognathous (Vol. I, p. 4). The deep plantar tendons differ from those of the Passeres in the *flexor longus hallucis* being connected by a vinculum with the *flexor profundus digitorum*, as shown in the accompanying figure (fig. 2). Syrinx mesomyodian (Vol. I, p. 6) and oligomyodian as in *Pittidæ* (Forbes, P. Z. S. 1880, p. 384). The sternum, as in the Passeres, has but one notch on each side of the hinder border (Sclater, Ibis, 1872, p. 179, also p. 370), but the manubrium sterni (spina externa) is unforked, as in most non-Passerine birds. Oil-gland present but nude.

The relations of the *Eurylæmi* or Broadbills to other birds have long been in dispute. At one time members of the present group were referred to the neighbourhood of *Coracias*. But, chiefly through the researches of Blanchard, Garrod, and Forbes, the close alliance between the *Eurylæmi* and Passerine birds has now been ascertained, and the only question remaining is whether the Broadbills should be included in the Passerine group as a distinct section, or whether they should form a suborder or order apart. The latter is the view advocated by Seebohm and Sharpe, and accepted, as a provisional arrangement, in the present work.

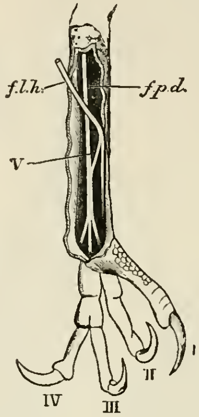

Fig. 2.—Left foot of *Cymborhynchus macrorhynchus*, from behind. The skin has been turned aside and the superficial flexors removed, so as to show the deep plantar tendons. I, II, III, IV, first, second, third and fourth toes; *f.l.h.*, *flexor longus hallucis*; *f.p.d.*, *flexor profundus digitorum*; *V*, vinculum. (Forbes, P. Z. S. 1880, p. 382.)

There is but a single family, confined to the Oriental region.

Family EURYLÆMIDÆ.

Bill normally broad and flat as in some *Muscicapidæ*. Feet adapted for perching; hind toe large, anterior toes joined at the base, the outer and middle toes (third and fourth) having only the last phalanx free (fig. 2). Tarsi reticulated behind, transversely scutellated in front, the scutellation often ill-marked and in some genera disappearing entirely on the inner anterior side of the tarsus. Tail generally rounded, often graduated.

The Broadbills are forest birds living generally in small flocks amongst high trees, and feeding as a rule on insects. They are often remarkably tame, some of them being, it is said, so unwilling to move that several out of the same flock may be shot one after the other, without the survivors being alarmed. They build large round nests of grass and fibres, somewhat resembling those of the *Nectariniidæ*, suspended from a fine twig and with an opening at the side (fig. 1). The eggs as a rule are white or cream-coloured, much speckled, especially towards the larger end, but occasionally they are spotless.

The genera in this family are more distinct than is usually the case amongst Birds, each being distinguished by a peculiar type of coloration. No species occur in the Peninsula of India, nor in Ceylon, but the range of the family extends from the Western Himalayas to the Philippines and Borneo, the majority inhabiting the Malay Peninsula.

Key to the Genera.

- *a.* Nostrils exposed.
  - *a′.* Tail shorter than wing.
    - *a″.* Sides of upper mandible convex and overhanging.
      - *a*³. Region below eye feathered .... EURYLÆMUS, p. 3.
      - *b*³. Region below eye nude; bill very broad .... CORYDON, p. 5.
    - *b″.* Sides of upper mandible straight, not overhanging.
      - *c*³. Nostrils elongate, about ⅓ length of bill from forehead .... CYMBORHYNCHUS, p. 7.
      - *d*³. Nostrils rounded, at base of bill .. SERILOPHUS, p. 8.
  - *b′.* Tail longer than wing .... PSARISOMUS, p. 11.
- *b.* Nostrils concealed by loral plumes ...... CALYPTOMENA, p. 12.

Genus **EURYLÆMUS**, Horsfield, 1821.

Bill large, broad and flat, culmen very blunt, sides of upper mandible overhanging and convex near the gape. Nostrils rounded, exposed, at base of bill. Wings and tail rounded, the wing much longer than the tail. Rictal bristles present but small. Scutellation of tarsus in front almost obsolete, inside of tarsus covered with an undivided lamina.

Upper plumage chiefly black and yellow; lower plumage wholly or in part vinaceous red. Two species are known, ranging from Tenasserim to the Malay Archipelago.

Key to the Species.

Larger; head and neck dark vinaceous red ...... *E. javanicus*, p. 4.
Smaller; head and throat black .... *E. ochromelas*, p. 5.

937. **Eurylæmus javanicus.** *Horsfield's Broadbill.*

Eurylaimus javanicus, *Horsfield, Trans. Linn. Soc.* xiii, p. 170 (1821); *Blyth, Cat.* p. 195; *Horsf. & M. Cat.* p. 116.

Eurylæmus javanicus, *Blyth, Birds Burm.* p. 125; *Hume, S. F.* ii, p. 470; *id. Cat.* no. 139 ter; *Davison, S. F.* v, p. 456; *Hume & Dav. S. F.* vi, pp. 89, 499; *Bingham, S. F.* ix, p. 157; *Oates, B. B.* i, p. 427; *id. in Hume's N. & E.* 2nd ed. p. 294: *Sclater, Cat. B. M.* xiv, p. 463.

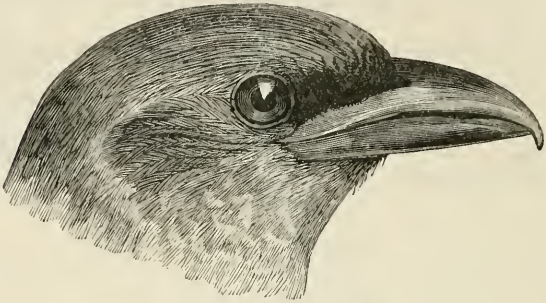

Fig. 3.—Head of *E. javanicus.*

Coloration. Male. Whole head and neck deep purplish red, lores blackish, crown and nape very dark, ear-coverts much brighter; a very narrow white line below the eye; hind neck brownish, back and upper tail-coverts mixed black and bright yellow, basal portion of interscapulary feathers white; wings black, each primary with a yellow spot at the base, each secondary with a long yellow spot on the outer web, inner webs of all quills whitish near the base; tail black, all feathers except the middle pair with a subterminal fulvous white spot or band. Lower parts vinaceous red, the throat washed with dusky bronze, a narrow black band across the breast and a distinctly bronzed gorget behind it, lower breast and abdomen brighter red; under wing-coverts mostly yellow, edge of wing the same, thigh-coverts dark brown.

Female. Similar, but without the black pectoral band.

Young birds have the head and nape yellowish brown, the shafts of the feathers brighter yellow; lower plumage yellowish throughout.

Upper mandible bright blue to within one-third of tip; rest of upper mandible pale sea-green; lower mandible pale greenish blue; both mandibles edged and tipped with brownish red; irides bright blue; legs and feet fleshy; claws brown (*Davison*).

Length 9 inches; tail 2·9; wing 4·3; tarsus 1; bill from gape 1·6. The female is slightly smaller.

Distribution. Karennee; Tenasserim as far north as Moulmein, probably farther north on the hills to the eastward; Malay Peninsula, Sumatra, Java, and Borneo.

Habits, &c. This species feeds on insects and small reptiles, and has the typical habits of the family, living in forests in small parties. Davison found it breeding near Bankasun in March; the nest was a massive structure composed of moss, fibres, roots, dry leaves, bits of wood, and small twigs, suspended to the extreme tip of a very tall bamboo overhanging a stream. Two fresh eggs were in the nest, dull white, thickly speckled with minute spots of dusky brown, more thickly towards the large end: size 1·09 by ·76.

938. **Eurylæmus ochromelas.** *The Black-and-yellow Broadbill.*

Eurylaimus ochromalus, *Raffles, Trans. Linn. Soc.* xiii, p. 297 (1822); *Blyth, Cat.* p. 195; *Horsf. & M. Cat.* p. 116.

Eurylæmus ochromelas, *Blyth, Birds Burm.* p. 125; *Hume, S. F.* ii, p. 470; *id. Cat.* no. 139 ter A; *Hume & Dav. S. F.* vi, p. 91; *Oates, B. B.* i, p. 426; *Sclater, Cat. B. M.* xiv, p. 465; *Hartert, J. f. Orn.* 1889, pp. 358, 391.

Coloration. Male. Whole head black, except a few white feathers below each eye; a white collar round the neck, narrow behind; upper parts from neck black, with a bright yellow stripe down the middle of the back, rump, and upper tail-coverts, and a shorter stripe on each side on the outer scapulars; basal portion of interscapulary feathers white; middle of outer webs of secondary quills yellow; near the base almost all wing-feathers have a whitish inner border; a small yellowish spot on each primary near the base; tail-feathers with a subterminal yellowish-white spot on inner web, becoming a band on the outer feathers; a broad black gorget below the white collar, lower breast and abdomen pale vinous purple; under wing- and tail-coverts, vent, flanks, and edge of wing yellow; thigh-coverts black.

Female. Similar, but the black gorget is interrupted in the middle.

The young have the forehead and supercilia yellowish white; the throat whitish, breast and abdomen yellowish grey.

Lower mandible and base of upper bright smalt-blue, rest of upper mandible bright green; edges of both mandibles black; irides bright yellow; legs and feet dark but fleshy-pink; claws brown (*Davison*).

Length 6·5; tail 2·2; wing 3·3; tarsus ·8; bill from gape 1·1.

Distribution. South Tenasserim as far north as Yay, Malay Peninsula, Sumatra and Borneo.

Genus **CORYDON**, Lesson, 1828.

Bill very large, much deeper, broader at the base and more hooked than that of *Eurylæmus*, the upper mandible more overhanging, and with the edge more convex near the gape; but the culmen is comparatively much shorter and more prominent. Rictal bristles replaced by plumules, which are situated in a nude area between the eye and bill. Wings and tail rounded; wing longer than tail. Tarsus distinctly scutellated in front. Sexes alike.

The plumage is mostly black. Only a single species is known.

939. **Corydon sumatranus.** *The Dusky Broadbill.*

Coracias sumatranus, *Raffles, Trans. Linn. Soc.* xiii, p. 303 (1822).
Corydon sumatranus, *Strickl. A. M. N. H.* vi, p. 417 (1841); *Blyth, Cat.* p. 195; *id. Birds Burma*, p. 125; *Horsf. & M. Cat.* p. 117; *Hume & Dav. S. F.* vi, p. 97; *Hume, Cat.* no. 139 sex; *Bingham, S. F.* ix, p. 157; *Oates, B. B.* i, p. 430; *Sclater, Cat. B. M.* xiv, p. 466.

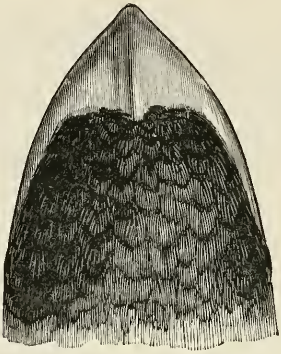

Fig. 4.—Head of *C. sumatranus.*

Coloration. Black throughout with the following exceptions:—a concealed interscapulary patch crimson (or occasionally yellow) and white, consisting of the basal parts only of the feathers, the tips being black; a broad white band across the primaries close to the coverts; a subterminal white spot or band on all tail-feathers except the middle pair; the throat and upper breast, which are dirty brownish white, the edges of the feathers in places darker. Female the same.

Young duller black, without an interscapulary patch, and with the white of the throat ill-defined.

Upper mandible varying from dark reddish brown to pale horny brown, lower mandible pale fleshy-pink with a dark median streak, tips of both whitish; orbital skin and gape dark fleshy-pink; legs, feet, and claws black; irides deep brown.

Length 10·5; tail 4·2; wing 5·4; tarsus 1·1; bill from gape 1·6.

Distribution. Apparently throughout Tenasserim, except in the deciduous forests, as far north as Karennee; also the Malay Peninsula, Sumatra and Borneo.

Habits, &c. This bird is found in pairs or small parties in forests. It is somewhat crepuscular according to Tickell, and during the day very sluggish. It has an oft-repeated mellow, rather musical note; also a clear whistle, which it utters when flying from tree to tree. The nest and eggs do not appear to have been recorded.

Genus **CYMBORHYNCHUS**, Vigors, 1830.

Bill not differing much in form from that of *Eurylæmus*, but narrower, with a somewhat higher culmen, and with the upper mandible straight-edged, not overhanging. The nostrils are elongate, and open in a longitudinal depression a considerable distance from the frontal feathers, about $\frac{1}{4}$ to $\frac{1}{3}$ the length of the bill from the base. Rictal bristles long. Tarsi indistinctly scutellated in front. Coloration above mostly black, below deep crimson.

Two species are known, ranging from Arrakan to Borneo.

Key to the Species.

Wing about 4; no red spots on tertiaries ..	*C. macrorhynchus*, p. 7.
Wing about 3·6; red terminal spots on tertiaries	*C. affinis*, p. 8.

940. **Cymborhynchus macrorhynchus.** *The Black-and-red Broadbill.*

Todus macrorhynchus, *Gm. Syst. Nat.* i, p. 446 (1788).
Todus nasutus, *Lath. Ind. Orn.* i, p. 268 (1790).
Cymborhynchus macrorhynchus, *Gray, Gen. B.* i, p. 66; *Horsf. & M. Cat.* p. 119; *Blyth, Birds Burma*, p. 126; *Stoliczka, J. A. S. B.* xxxix, pt. 2, p. 285; *Davison, S. F.* v, p. 457; *Hume & Dav. S. F.* vi, p. 92; *Hume, Cat.* no. 139 quint.; *Sharpe, Ibis*, 1876, p. 48; 1877, p. 22; 1879, p. 264; *Bingham, S. F.* ix, p. 157; *Oates, B. B.* i, p. 428; *Sclater, Cat. B. M.* xiv, p. 468; *Hartert, J. f. Orn.* 1889, pp. 358, 393; *Oates in Hume's N. & E.* 2nd ed. ii, p. 294.
Cymbirhynchus nasutus, *Vigors, Mem. Raffles*, p. 654 (1830); *Blyth, J. A. S. B.* xv, p. 311; *id. Cat.* p. 195.
Cymborhynchus malaccensis, *Salvad. Atti R. Ac. Sc. Tor.* ix, p. 425 (1874); *Oates, S. F.* iii, p. 336.

Coloration. Upper parts except the scapulars, rump, and upper tail-coverts black; chin, upper throat, and a broad pectoral band also black; a white longitudinal band on each side of the back, formed by the outer half of the scapulars; rump and upper tail-coverts, ear-coverts and the throat between them, lower breast, abdomen, flanks, and lower tail-coverts deep crimson, sometimes mixed with orange on the belly; wings black, the edge orange-yellow, under wing-coverts in part, and basal portion of inner web of most wing-feathers white, axillaries yellowish white; tail black, a variable number of the outer feathers with a white subterminal spot on the inner web.

Young dusky instead of black, white spots on tips of wing-coverts, rump mixed red and black; lower plumage dark brown with traces of transverse bars.

Upper mandible and a bordering along the edge of the lower mandible brilliant blue, remainder of the latter yellowish, edges of both transparent white; irides emerald-green, shot with gold; legs and feet ultramarine-blue; claws horny (*Bingham*). Inside of mouth bright blue (*Davison*).

Length 9·5; tail 3·5; wing 4; tarsus ·95; bill from gape 1·25. Females rather smaller.

Distribution. From Tenasserim through Siam, Cambodia, and the Malay Peninsula to Sumatra and Borneo. This Broadbill was obtained as far north as the Dawna range near Kokarit, east of Moulmein, by Bingham.

Habits, &c. Similar to those of *Eurylæmus*, except that this species, according to Davison, is found in gardens and near villages. It lives entirely on insects. It breeds in Tenasserim from April to June, making the usual large globular Broadbill's nest of grass, roots, &c., suspended to the end of a bough, and containing 3 or 4 eggs varying from white to salmon-buff in colour, and densely spotted or speckled, especially about the larger end, with black or brownish red. The eggs measure about 1·06 by ·75.

941. **Cymborhynchus affinis.** *The Arrakan Black-and-red Broadbill.*

Cymborhynchus affinis, *Blyth, J. A. S. B.* xv, p. 312 (1846); *id. Cat.* p. 195; *id. Birds Burma*, p. 126; *Oates, S. F.* iii, p. 336; x, p. 188; *id. B. B.* i, p. 429; *Hume, Cat.* no. 139 quat.; *Sclater, Cat. B. M.* xiv, p. 470.

Coloration. Similar to the last except that the red of the rump is mixed with black; there are always white subterminal spots on all tail-feathers except the middle pair, and these spots become bars on the three outer rectrices on each side; the white at the base of the primaries appears from beneath the outer wing-coverts, and each tertiary has a long red spot at the end.

Length 8·2; tail 3; wing 3·6; tarsus ·86; bill from gape 1.

Distribution. Arrakan from about lat. 19° southward to Cape Negrais, also the Irrawaddy delta as far east as Rangoon. Nothing is known of the habits.

Genus **SERILOPHUS**, Swainson, 1837.

Bill very much smaller than in *Eurylæmus*, sides of upper mandible straight, not overhanging. Tail much rounded. Secondaries and inner primaries truncated, and emarginate at the ends of the shafts. Rictal bristles present. Nostrils and tarsi as in *Eurylæmus*.

Plumage soft, greyish or brownish above, ashy below; a white gorget in females only. Two species, ranging from the Himalayas to Tenasserim.

Key to the Species.

Head above pale greyish brown..................	*S. lunatus*, p. 9.
Head above dark ashy grey	*S. rubripygius*, p. 9.

942. **Serilophus lunatus.** *Gould's Broadbill.*

Eurylaimus lunatus, *Gould, P. Z. S.* 1833, p. 133.
Serilophus lunatus, *Swainson, Class. B.* ii, p. 262; *Blyth, J. A. S. B.* xv, p. 311; *id. Cat.* p. 196; *id. Birds Burm.* p. 125; *Horsf. & M. Cat.* p. 118; *Hume, S. F.* ii, p. 470; iii, p. 53; *id. Cat.* no. 139 bis; *Wardl. Ramsay, Ibis,* 1875, p. 352; *Davison, S. F.* v, p. 455; *Hume & Dav. S. F.* vi, pp. 89, 499; *Oates, S. F.* viii, p. 164; x, p. 188; *id. B. B.* i, p. 424; *Bingham, S. F.* ix, p. 157: *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 574; *Sclater, Cat. B. M.* xiv, p. 460; *Oates in Hume's N. & E.* 2nd ed. ii, p. 291.

Primary quills, especially 3rd and 4th, sharply pointed, the worn inner web of the two feathers named having the edge concave near the tip.

Coloration. Male. Forehead pale ashy, crown and nape pale greyish brown, back darker, passing into chestnut on the rump and upper tail-coverts; a broad black supercilium extending back to the nape; lores pale rufous with black hairs intermixed, ear-coverts greyish rufescent; wings black, basal portion of outer webs of almost all quills greyish blue, a large white spot on the inner web of each, 3rd and 4th primaries with broad white tips, tertiaries and tips of inner webs of all quills except the first five pale chestnut, tips of the outer webs of the same feathers and of the fifth primary white; tail-feathers black, the outer 3 pairs with broad white tips; lower parts ashy grey, whitish on the throat and abdomen; lower wing-coverts and thighs black, edge of wing white.

Female similar, but with a glistening silvery white gorget.

Bill light blue, paler on the culmen; gape and base of both mandibles orange; mouth orange; eyelids greenish yellow; iris dark brown; legs greenish orange; claws light blue (*Oates*).

Length 7; tail 2·8; wing 3·4; tarsus ·8; bill from gape ·92.

Distribution. Evergreen forests of Pegu hills, also Karennee and throughout Tenasserim. Not at present recorded outside British territory.

Habits, &c. This Broadbill occurs in small flocks in forests, and is apparently strictly arboreal. It feeds chiefly on insects. It is described as very stupid and not easily alarmed. It breeds from April to July inclusive, making a globular nest, about six inches in diameter, of coarse grass, vegetable fibres, twigs, moss, rootlets, cocoons, and similar materials. The nest is lined with broad leaves, some of them occasionally green; it has a side entrance protected by a rude porch, and hangs from the end of a small branch. The eggs, generally four in number, are thin and delicate, pure white with a slight gloss, marked with purplish-black specks and minute spots towards the larger end, and measure ·95 by ·67.

943. **Serilophus rubripygius.** *Hodgson's Broadbill.*

Raya rubropygia, *Hodgs. J. A. S. B.* viii, p. 36 (1839).
Serilophus rubropygius, *Bp. Consp.* i, p. 169; *Blyth, J. A. S. B.* xv,

p. 311; *id. Cat.* p. 196; *id. Birds Burm.* p. 125; *Horsf. & M. Cat.* i, p. 119; *Jerd. B. I.* i, p. 238; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 95; xlv, pt. 2, p. 69; *Hume, Cat.* no. 139; *id. S. F.* ix, p. 247; xi, p. 49; *Oates, B. B.* i, p. 425; *Sclater, Cat. B. M.* xiv, p. 461; *Hartert, J. f. Orn.* 1889, p. 395; *Oates in Hume's N. & E.* 2nd ed. ii, p. 293.

The Red-backed Broadbill, Jerdon; *Ra-i-suga*, Nepal; *Rab-kyul*, Lepcha.

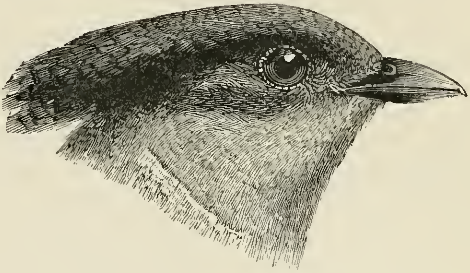

Fig. 5.—Head of *S. rubripygius*, ♀.

Tips of outer primaries rounded.

Coloration. Male. Head above, nape, and upper back dark ashy grey; a long black supercilium to the nape; back browner, passing into the ferruginous-red tertiaries, rump, and upper tail-coverts. Wings black, outer webs of almost all feathers dull blue near the base, corresponding to a white spot on the inner web; extreme tips of first 5 primaries white, of the remaining primaries chestnut, bordered inside with bluish grey; most of the wing-feathers except the first five with a small white spot on the outer web near the tip. Tail black, the three outer pairs of feathers with broad white tips. Lower parts ashy grey, under wing-coverts and thighs black; edge of wing whitish.

Female with pure white tips to some of the neck-feathers, forming a narrow collar at each side but interrupted in the middle.

Bill blue, paler towards the tip, a green spot, in the male only, in the middle of the lower mandible; iris greyish brown, naked skin round the eye dark yellow, narrow ring of the eyelid green; feet yellowish green, whitish-blue spots on the toes, nails whitish blue (*Hartert*); iris brown speckled with gold (*Hume*).

Length 7·25; tail 2·8; wing 3·3; tarsus ·85; bill from gape ·9.

Distribution. Eastern Himalayas, below about 5000 feet, as far west as Nepal; Assam and the hills to the southward as far as Arrakan and Manipur.

Habits, &c. Very similar to those of *S. lunatus*, but this bird is less tame. It feeds on insects, and Hume shot one in Manipur that had eaten small land mollusca. The nest and eggs, which resemble those of the last species, have been described by Mr. Gammie in Sikkim, and by Mr. Baker in Cachar. The eggs measure about ·95 by ·66.

Genus **PSARISOMUS**, Swainson, 1837.

Bill similar to that of *Eurylæmus*, but smaller, edge of upper mandible straight, not overhanging; no rictal bristles; loreal feathers directed forward. Tarsi indistinctly scutellated in front outside, the scutellation becoming obsolete inside. Tail greatly graduated, longer than the wing. General colour bright green. Sexes alike.

A single species.

944. **Psarisomus dalhousiæ.** *The Long-tailed Broadbill.*

Eurylaimus dalhousiæ, *Jameson, Edinb. N. Ph. J.* xviii, p. 389 (1835); *Royle, Ill. Bot. Him.* i, p. lxxvii, pl. vii, fig. 2.
Psarisomus dalhousiæ, *Blyth, Cat.* p. 195; *id. Birds Burma*, p. 126; *Horsf. & M. Cat.* p. 117; *Jerdon, B. I.* i, p. 236; *Godwin-Austen, J. A. S. B.* xxxix, pt. 2, p. 95; xlv, pt. 2, p. 69; *Walden, Ibis*, 1875, p. 460; *Hume, S. F.* iii, p. 52; v, p. 19; xi, p. 48; *id. Cat.* no. 138; *Hume & Dav. S. F.* vi, pp. 88, 499; *Bingham, S. F.* viii, p. 193; ix, p. 156; *Oates, S. F.* x, p. 188; *id. B. B.* i, p. 423; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 574; *Sclater, Cat. B. M.* xiv, p. 458; *Oates in Hume's N. & E.* 2nd ed. ii, p. 289.
Raya sericeogula, *Hodgson, J. A. S. B.* viii, p. 36 (1839).
Psarisomus assimilis, *Hume, S. F.* iii, p. 53.

The Yellow-throated Broadbill, Jerdon; *Rai-i*, Nepalese; *Dang-mo-mith*, Lepcha.

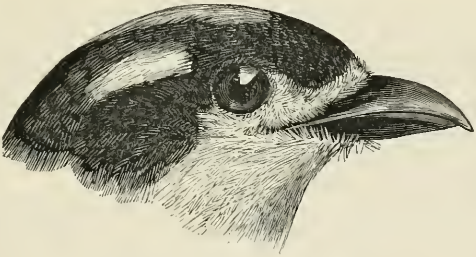

Fig. 6.—Head of *P. dalhousiæ.*

Coloration. Crown and nape with the sides of the head behind the eyes black; a large bright blue patch on the crown; a narrow frontal line, an elongate spot behind the eye, lores and chin bright yellow, passing into orange-yellow on the throat; this colour is continued behind the black cap as a collar, the nuchal portion of which, sometimes difficult of detection in skins, is bright blue. Upper plumage from neck to tail-coverts inclusive bright grass-green; tertiaries and outer webs of secondaries the same; inner webs of wing-feathers black, outer webs of primaries bright blue near the base, dark bluish green towards the tip, a large white spot on inner web of each primary near the base; tail blue above, black below; lower plumage from breast bright bluish green. Female the same. In some skins the spot behind the eye is greenish yellow or white; the collar, too, has in many birds a satin-white hinder border.

Bill green in general, but sometimes brownish yellow, gape and tip bluish or whitish; iris brown; orbits yellow or greenish; legs and feet dull light green; claws horny.

Young birds have the whole head green or greenish.

Length 10·5; tail 5; wing 4·1; tarsus 1·1; bill from gape 1·3.

Distribution. Throughout the Himalayas as far west as Dehra Dun and Mussooree, from a low level to about 6000 feet elevation; also Assam, Manipur, Cachar, and Burma generally, in hilly parts of the country, and through the Malay Peninsula to Sumatra and Borneo.

Habits, &c. This beautiful Broadbill is found usually solitary or in pairs, but sometimes in small flocks, and is restricted to thick forest. It feeds entirely on insects, which it sometimes captures on the wing. The nests (fig. 1) are like those of other Broadbills, large globular structures of grass, roots, fibres, &c., with a lateral entrance, which is sometimes protected by an overhanging portico. This nest is suspended from a fine twig; the egg-cavity is lined with green leaves; the eggs, 3 to 5 in number, are laid in April or May, and are of two types—the one pure white and glossy, the other white or pinkish, blotched, chiefly about the large end, with red and pale reddish purple, and almost without gloss. Average size 1 by ·7.

Genus **CALYPTOMENA**, Raffles, 1822.

Bill smaller than in other *Eurylæmidæ*, and the culmen higher. Nostrils at the base of the beak, and concealed, as is the greater part of the upper mandible, by the feathers of the lores, which are large and directed forward. No rictal bristles. Tail short and nearly square. Tarsi distinctly scutellated in front. Plumage harsh, bright green nearly throughout.

This is the most aberrant member of the group, and has been by many writers placed in a different family or subfamily. Three species are now known, two of which are peculiar to Borneo.

945. **Calyptomena viridis.** *The Green Broadbill.*

Calyptomena viridis, *Raffles, Trans. Linn. Soc.* xiii, p. 295 (1822); *Blyth, Cat.* p. 196; *id. Birds Burm.* p. 124; *Horsf. & M. Cat.* p. 120; *Stoliczka, J. A. S. B.* xxxix, pt. 2, p. 284; *Hume & Dav. S. F.* vi, pp. 86, 499; *Hume, Cat.* no. 137 bis; *Oates, B. B.* i, p. 422; *Sclater, Cat. B. M.* xiv, p. 456; *Oates in Hume's N. & E.* 2nd ed. ii, p. 288.

Coloration. Male. Bright green throughout, slightly paler on the abdomen; a minute yellow spot in front of the eye; sides of forehead (greatly concealed by loral feathers), a large spot behind the ear-coverts, three bands across the wing-coverts, and the wing-feathers (except the outer webs of the secondaries and the basal portion of the outer webs in the primaries) black.

Female duller and paler green throughout, especially below; no black marks; wing-feathers brown. Young birds are like the females, but duller in colour.

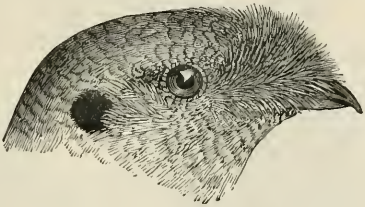

Fig. 7.—Head of *C. viridis*.

Upper mandible pale horny to brown or even black, the tip and the lower mandible light reddish horny or brownish orange; gape orange; iris dark brown; legs pale dirty or horny green, sometimes tinged with bluish, sometimes with purplish grey.

Males, length about 7·5; tail 2; wing 4·2; tarsus ·8; bill from gape 1·1. Females are rather larger, wing about 4·4.

Distribution. Tenasserim from Amherst southward, also the Malay Peninsula, Sumatra and Borneo.

Habits, &c. According to Davison this beautiful Broadbill lives entirely on fruit. It keeps to the forests and frequents the tops of the trees singly, in pairs, or in small parties. It is only active in the mornings and evenings. The note is a soft whistle. Several nests have been taken in Tenasserim by Mr. J. Darling, and are egg-shaped, measuring about 9 inches by 4, pinched flat at the top, along the twig from which each is suspended, and ending in a tail, sometimes 3 feet long. The nest is large, composed chiefly of fine grass, sometimes mixed with roots &c., and contains about 3 very pale yellow or creamy eggs, unspotted, with little or no gloss, and measuring about 1·15 by ·8.

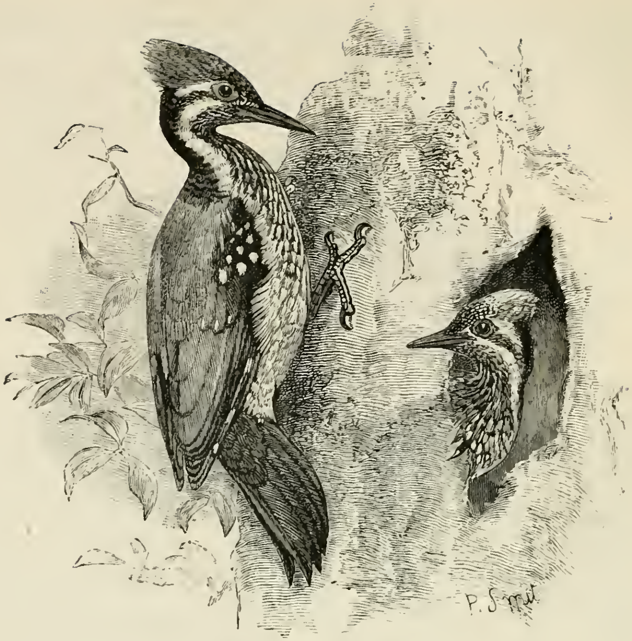

Fig. 8.—*Brachypternus aurantius* and nest-hole.

Order III. PICI.

With the Woodpeckers we commence a series of bird-families sometimes combined under the general name of *Picariæ*, but exhibiting such complicated relations with each other and with other groups of birds that their classification is by no means finally settled. In the present work it appears best to leave them in a number of small orders, each frequently consisting, as in the present instance, of a single family.

The Woodpeckers were formerly associated under the name *Scansores* with Barbets, Cuckoos, Parrots, and other birds having two hind and two fore toes, the fourth digit being directed backwards as well as the first or hallux. But the Parrots have long been known to differ from the others widely in structure, and were classed apart by Blyth in his Catalogue in 1849. Huxley, in his important paper 'On the Classification of Birds' (P. Z. S. 1867, pp. 448, 467), distinguished the Woodpeckers as a group called *Celeomorphæ*, equal in rank to the Accipitrine birds or the Parrots, and the distinction was emphasized by Kitchen Parker, who separated Woodpeckers and Wrynecks as *Saurognathæ*, on account of what he regarded as the reptilian characters presented by the bones of the palate. The view that Woodpeckers and Wrynecks form a separate group has been accepted by many recent writers, notably by Sundevall *, Sclater †, Newton ‡, Sharpe §, and Gadow ||, though not by Garrod ¶, by Fürbringer **, nor by Seebohm ††. The following are the principal characters:—

Vomer represented by several distinct paired lateral rods; maxillo-palatines small, widely distant from each other (fig. 9).

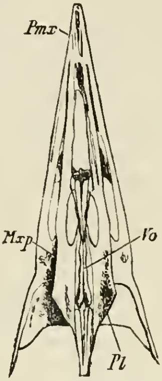

Fig. 9.—Palate of *Gecinus viridis* (Huxley, P. Z. S. 1867, p. 448). *Pmx*, premaxillæ; *Mxp*, maxillo-palatine; *Pl*, palatine; *Vo*, the ossicles which appear to represent the vomer.

The *flexor longus hallucis*, after sending off a vinculum to the *flexor perforans digitorum*, is divided, one branch going to the fourth toe, the other being again divided to supply the first and second, whilst the *flexor perforans digitorum* runs to the third alone (see fig. 22, p. 80). The same arrangement is found in the Barbets, Indicators, Toucans, and some other families.

Sternum with two notches behind on each side of the keel; the manubrial process bifurcate as in the Passeres. The femoro-caudal and semitendinosus muscles present; ambiens and accessory femoro-caudal absent. Cæca wanting or quite rudimentary. In pterylosis, the spinal feather-tract is well defined on the back and forked on the lower, not on the upper back. Oil-gland tufted, not nude as in Passeres.

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* 'Tentamen,' p. 72. † 'Ibis,' 1880, pp. 350, 402.

‡ Article "Ornithology," Encyclopædia Brit. p. 47.

§ 'Review of Recent Attempts to Classify Birds,' p. 84. (The Neotropical Buccones and Galbulæ are here associated.)

|| Bronn, Klassen u. Ordn. des Thier-Reichs, vi, 4, p. 301.

¶ P. Z. S. 1878, p. 935. ** 'Untersuchungen,' ii, p. 1392.

†† 'Classification of Birds,' p. 6; Supplement, p. 23.

Family PICIDÆ.

Tail-feathers always 12, the outermost pair in the majority of the genera short and often completely concealed by the coverts, so that these two feathers are difficult to find. Bill generally strong and in many forms modified into a cutting weapon, the end of the upper mandible being vertical and chisel-shaped. With this weapon Woodpeckers cut away the bark of trees to look for insects, and make holes in the trunks or branches for nests. Many species by tapping on trees make a noise that may be heard a considerable distance. The nostrils are basal; above them, in several genera, a ridge known as the nasal ridge commences, and runs, parallel to the culmen, to join or nearly to join the commissure. The tongue is excessively long, worm-like, and capable of great protrusion; it is supplied with viscid mucus from the large salivary glands, so that insects, their larvæ and eggs adhere to it. The point of the tongue is horny and barbed. The hyoid cornua, which are of enormous length, slide round the skull, passing in a sheath from the side of the gullet round the occiput to the base of the upper mandible.

All Indian *Picidæ* are insectivorous, a large proportion of them feeding mainly and some entirely on ants. All lay glossy white eggs, and all, with the exception of one genus, make holes in trees and lay their eggs in them, the eggs resting on the chips without any other lining to the hole. The exception is the genus *Micropternus*, which lays its eggs in ants' nests.

The *Picidæ* are not found in Madagascar, Australia, or Polynesia, but range through all other temperate and tropical regions. They are divided into three subfamilies, thus distinguished:—

Shafts of tail-feathers stout and rigid	*Picinæ*, p. 17.
Shafts of tail-feathers flexible. Tail (in Indian forms) less than $\frac{3}{5}$ length of wing; nostrils concealed by plumes	*Picumninæ*, p. 75.
Shafts of tail-feathers flexible. Tail $\frac{3}{4}$ wing or more; nostrils not concealed by plumes, but partly covered by a membrane	*Iynginæ*, p. 78.

Woodpeckers are known as *Kat-tokra*, H., in Northern India, *Lakhor-phor* in the South; *Kat-barya* at Mussooree; *Katparwa* in Oude; *Lohár*, Maráthi; *Manu-tolachi*, Telugu; *Marram-tolashi*, Tamul; *Tatchan-kuruvi*, Tam. in Ceylon; *Kœrella*, Cingalese; *Thit-touk*, Burmese; these names being applied to all kinds. The Lepchas of Sikhim, as Jerdon observes, alone appear to have names for different species.

Subfamily PICINÆ.

This contains the true Woodpeckers, with very stout shafts to the tail-feathers, the points of which are pressed against the bark of trees when the birds are climbing or tapping to get at insects. The tail is frequently much worn, and hence varies considerably in length. Woodpeckers seldom perch, they cling to the stems and branches of trees with the tail always downward, and they usually ascend and descend diagonally. They have a peculiar undulating flight easily recognized. The Indian genera are numerous.

Key to the Genera.

- *a*. Primaries spotted or banded.
  - a'. Nostrils concealed by plumes.
    - a''. Toes 4.
      - a^3. Mantle wholly or partly green, back not barred.
        - a^4. Culmen nearly straight, a distinct nasal ridge .... GECINUS, p. 18.
        - b^4. Culmen curved, nasal ridge obsolete .... CHRYSOPHLEGMA, p. 27.
      - b^3. Mantle chiefly crimson, back barred across .... CALLOLOPHUS, p. 29.
      - c^3. Mantle black and white.
        - c^4. Nasal ridge less than half length of bill, and at base nearer commissure than culmen .... HYPOPICUS, p. 32.
        - d^4. Nasal ridge half length of bill or more, and at base not nearer commissure than culmen.
          - a^5. Second primary shorter than sixth.
            - a^6. Primaries exceed secondaries by length of culmen or more .... DENDROCOPUS, p. 33.
            - b^6. Primaries exceed secondaries by less than length of culmen.............. LIOPICUS, p. 43.
          - b^5. Second primary longer than sixth.................... IYNGIPICUS, p. 44.
    - b''. Toes 3.
      - d^3. Mantle green or red............ GECINULUS, p. 30.
      - e^3. Mantle golden olive .... GAUROPICOIDES, p. 63.

b'. Nostrils exposed.
  c''. Mantle rufous or crimson, more or less banded.
    f^3. Culmen nearly straight, tip truncated .... PYRRHOPICUS, p. 49.
    g^3. Culmen curved, tip pointed...... MICROPTERNUS, p. 54.
  d''. Mantle wholly or partly golden olive or crimson, not banded.
    h^3. Toes 4.
      e^4. Hallux well developed, half length of second digit ...... CHRYSOCOLAPTES, p. 64.
      f^4. Hallux small, about $\frac{1}{3}$ second digit .... BRACHYPTERNUS, p. 58.
    i^3. Toes 3...................... TIGA, p. 61.
  e''. Mantle black or brown and buff.... MIGLYPTES, p. 52.
b. Primaries without spots or bands.
  c'. Tertiaries with large spots; size small. HEMICERCUS, p. 68.
  d'. All quills unspotted; size large.
    f''. Plumage mostly ashy grey........ HEMILOPHUS, p. 70.
    g''. Plumage mostly black .... THRIPONAX, p. 72.

Genus **GECINUS**, Boie, 1831.

Nostrils concealed by harsh plumes; culmen slightly curved, a distinct nasal ridge, nearer to the culmen than to the commissure at the base of the bill. Four toes to each foot, the 3rd (outer anterior) toe longer than the 4th (outer posterior); tail less than two-thirds the wing in length; outermost tail-feather on each side very short, not nearly so long as the upper tail-coverts. Upper plumage green wholly or in part: sexes distinguished by portions of the head, generally of the crown, being red in males and not in females.

This genus, of which the type is the common European *G. viridis*, ranges almost throughout the Palæarctic and Oriental regions, and is represented by nine species within our area. Members of this genus obtain their insect-food more frequently on fallen trunks of trees and on the ground than Woodpeckers in general are wont to do.

Key to the Species.

a. Rump green or yellow.
  a'. Lower parts with longitudinal markings; male with crimson, female with black cap.
    a''. Tail barred throughout.
      a^3. Dark bars on middle tail-feathers broader than white bars .... *G. squamatus*, p. 19.
      b^3. Dark bars narrower than white.... *G. gorii*, p. 20.
    b''. Tail not barred throughout.
      c^3. White predominating on lower parts. *G. striolatus*, p. 20.
      d^3. Dark predominating on lower parts. *G. viridanus*, p. 22.
  b'. Lower parts almost uniformly coloured; crown crimson and occiput black in male, both black in female .... *G. occipitalis*, p. 22.

c'. Lower parts with transverse bars or spots; a yellow nuchal crest.
  c''. Outer surface of wing green, tinged with red.
    e^3. Whole occiput never crimson; wing about 5·4.
      a^4. Forehead, each edge of crown and of occiput and malar stripe crimson. *G. chlorolophus* ♂, p. 23.
      b^4. Sides of occiput only crimson .. *G. chlorolophus* ♀, p. 23.
    f^3. Whole occiput crimson; wing about 4·6.
      c^4. Crown and malar stripe crimson. *G. chlorogaster* ♂, p. 25.
      d^4. Only occiput crimson .... *G. chlorogaster* ♀, p. 25.
  d''. Outer surface of wing red .... *G. puniceus*, p. 26.
b. Rump bright red .... *G. nigrigenis*, p. 26.

946. **Gecinus squamatus.** *The West-Himalayan Scaly-bellied Green Woodpecker.*

Picus squamatus, *Vigors, P. Z. S.* 1830, p. 8; *Blyth, J. A. S. B.* xii, p. 998.

Gecinus squamatus, *Blyth, Cat.* p. 57; *Horsf. & M. Cat.* p. 659; *Jerdon, B. I.* i, p. 286; *id. Ibis*, 1872, p. 9; *Tytler, Ibis*, 1868, p. 202; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 20; *Beavan, Ibis*, 1869, p. 414; *Cock & Marsh. S. F.* i, p. 350; *Hume, Cat.* no 170; *Biddulph, Ibis*, 1881, p. 49; *Scully, Ibis*, 1881, p. 430; *Hargitt, Ibis*, 1888, p. 153; *id Cat. B. M.* xviii, p. 43; *Oates in Hume's N. & E.* 2nd ed. ii, p. 297; *Sharpe, Yarkand Miss., Aves*, p. 108.

The Scaly-bellied Green Woodpecker, Jerdon; *Tuktola*, Chamba.

Coloration. Male. Crown and occipital crest crimson: mantle, including sides of neck, back, scapulars, and secondary wing-coverts, green, rump and upper tail-coverts strongly tinged with yellow; a broad yellowish-white supercilium extending to the nape with a black line above continued across the forehead, and another black line below from the eye to the nostril: a black spot behind the eye; another broad yellowish-white streak from the base of the bill below the eye, below this streak the malar region is black mixed with greenish white; ear-coverts greenish grey; wing-feathers brownish black, inner webs of all with imperfect white bands, in the primaries towards the base only; outer webs of primaries with equidistant yellowish-white spots; outer webs of secondaries and tertiaries greenish dusky barred with whitish; primary-coverts dusky, with white spots; tail-feathers above brownish black with white bars rather narrower than the interspaces; below, the dark bars are pale and the whole feathers tinged with yellow; throat and breast pale greyish green, sometimes varying to pale ashy; abdomen and flanks with lower wing- and tail-coverts greenish white, each feather with a black intramarginal band producing a scale-like marking, and with sometimes a black shaft-stripe.

Female. Crown and occiput black instead of crimson, the bases of the feathers leaden grey, and the sides of the frontal and coronal feathers greenish grey.

In young birds the upper plumage is dusky, the feathers being edged with green, and the breast-feathers bear scale-like marks like those of the abdomen.

Iris a circle of darkish pinkish red surrounded by a second ring of light pink; upper mandible horn-coloured at the base, the tip and the whole lower mandible brightish yellow (*Beavan*); legs greenish plumbeous (*Jerdon*).

Length 14; tail 5·3; wing 6·5; tarsus 1·1; bill from gape 1·9.

Distribution. The Himalayas from Gilgit and Kashmir to Kumaun and probably Western Nepal, at elevations from about 5000 to 9000 feet. A skin was obtained in Afghanistan by Griffith.

Habits, &c. This Woodpecker is often seen feeding on the ground. It lays generally five, sometimes six eggs in a hole excavated in the stem of a tree, in March, April, or May. The eggs are white and very glossy, and measure on an average 1·28 by ·93. The nest-hole is generally placed at a considerable height from the ground, as a rule more than 20 feet.

947. **Gecinus gorii.** *Hargitt's Scaly-bellied Green Woodpecker.*

Gecinus gorii, *Hargitt, Ibis,* 1887, p. 75, 1888, p. 159; *id. Cat. B. M.* xviii, p. 45; *St. John, Ibis,* 1889, p. 158; *Aitchison, Trans. Linn. Soc.* (2) *Zool.* v, p. 83, pl. vi, fig. 1.

This is paler throughout than *G. squamatus*, but otherwise very similar. The pale spots and bars on the wing- and tail-feathers are larger, the pale bars on the tail-feathers and the white spots on the outer webs of the primaries being broader than the dark interspaces; the scale-like markings on the abdomen are narrower and fainter. Dimensions the same.

Distribution. South Afghanistan. Only known from two specimens, one from Quetta, the other from the Helmand River. Sir O. B. St. John saw *G. gorii* on the Kwaja Amran hills, and probably in the juniper forests of Ziarat.

I suspect that this is merely a pale variety of *G. squamatus*.

948. **Gecinus striolatus.** *The Little Scaly-bellied Green Woodpecker.*

Picus striolatus, *Blyth, J. A. S. B.* xii, p. 1000 (1843); *Jerdon, Mad. Jour. L. S.* xiii, pt. 2, p. 138.

Gecinus striolatus, *Blyth, Cat.* p. 57; *Horsf. & M. Cat.* ii, p. 660; *Jerdon, B. I.* i, p. 287; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 21; *Blanf. Ibis,* 1870, p. 464; *Jerdon, Ibis,* 1872, p. 9; *Legge, S. F.* i, p. 488; *id. Birds Ceyl.* p. 194; *Ball, S. F.* ii, p. 391; v, p. 413; vii, p. 206; *Blyth & Wald. Birds Burm.* p. 76; *Hume & Oates, S. F.* iii, p. 68; *Butler, S. F.* iii, p. 458; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 70; xlvii, pt. 2, p. 14; *Inglis, S. F.* v, p. 26; *Fairbank, S. F.* v, p. 396; *Anderson, Yunnan Exped., Aves,* p. 585; *Cripps, S. F.* vii, p. 262; *Hume, Cat.* no. 171; *Scully, S. F.* viii, p. 247;

Butler, S. F. ix, p. 386; *Oates, S. F.* x, p. 191; *id. B. B.* ii, p. 49; *Davison, S. F.* x, p. 355; *Terry, ib.* p. 471; *Barnes, Birds Bom.* p. 116; *Hume, S. F.* xi, p. 62; *Hargitt, Ibis*, 1888, p. 171; *id. Cat. B. M.* xviii, p. 50; *Oates in Hume's N. & E.* 2nd ed. ii, p. 298.

The Small Green Woodpecker, Jerdon.

Coloration. Male. Crown and occipital crest crimson, posterior crest-feathers sometimes orange; mantle olivaceous green; rump bright gamboge-yellow or sometimes orange; a greyish-white superciliary stripe bordered with black above, beginning above the eye and extending back to the nape, the black extends forward to the base of the forehead and to the brownish-black plumes over the nostrils; lores and a stripe under the eye and ear-coverts brownish white; ear-coverts grey, faintly streaked with whitish; malar band white, streaked with black; wing-feathers as in *G. squamatus* brownish black with white spots; tail-feathers brownish black, imperfectly barred towards the base with light brown, outermost pair but one barred throughout; lower parts greenish white, breast greener and with a yellowish tinge; chin and throat striped; feathers of remainder of lower parts with intramarginal bands and occasional shaft-stripes of olive or brown.

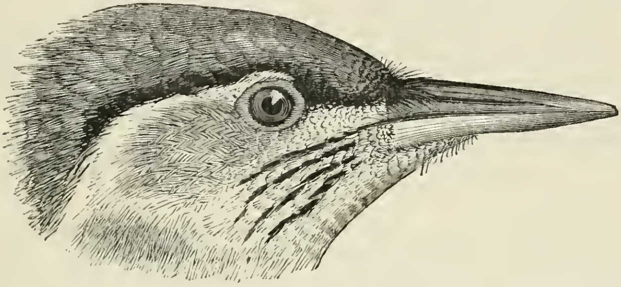

Fig. 10.—Head of *G. striolatus.*

Female. The crown and occiput black, the sides of the crown-feathers brownish ashy. Otherwise like the male.

Iris red, surrounded by white; eyelids plumbeous; upper mandible and tip of lower horn-colour, remainder of lower mandible yellow; legs olive-green (*Oates*).

Length 11·5; tail 3·8; wing 5·2; tarsus 1; bill from gape 1·4.

Distribution. The range of this Woodpecker is somewhat peculiar. It is found throughout the Himalayas as far west as Mussooree, and is generally distributed throughout the countries south of the Eastern Himalayas as far south as the Irrawaddy delta and Toungngoo. Anderson obtained it at Momein. There is also in the British Museum a skin from Siam. It also occurs, though sparingly, throughout the forest country between the Ganges and Godávari, east of long. 80° East, and in the forests of Malabar and of the Western Ghats as far north as the neighbourhood of Belgaum, in Mysore, and in other forest-clad tracts of Southern India; also, but rarely, in Ceylon. In the Bombay Presidency north of Belgaum and in Central and North-western India it is excessively rare or wanting except on the Aravalli Range near Abu.

Habits, &c. Breeds from March to May, in holes in the stems or branches of trees, laying generally five glossy porcellanic white eggs, that measure on an average 1·05 by ·8.

949. **Gecinus viridanus.** *The Burmese Scaly-bellied Green Woodpecker.*

Picus viridanus, *Blyth, J. A. S. B.* xii, p. 1000 (1843); xiii, p. 394.
Gecinus dimidiatus, *apud Blyth, Cat.* p. 58, *nec Temm.*
Gecinus viridanus, *Horsf. & M. Cat.* ii, p. 660; *Walden, P. Z. S.* 1866, p. 539; *Beavan, Ibis,* 1869, p. 414; *Blyth & Wald. Birds Burm.* p. 76; *Oates, B. B.* ii, p. 48; *Hargitt, Ibis,* 1888, p. 166; *id. Cat. B. M.* xviii, p. 47; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 566; vii, p. 432.
Gecinus vittatus, *apud Hume & Oates, S. F.* iii, p. 68; *Armstrong, S. F.* iv, p. 310; *Hume & Dav. S. F.* vi, p. 136; *Hume, Cat.* no. 171 bis; *Bingham, S. F.* ix, p. 163, *nec Vieill.*

Very similar to *G. striolatus*, but larger, the bill and tail longer, the malar band much more marked, owing to the feathers having much broader black median stripes, the scale-like markings on the lower parts much broader, so that the lower coloration is altogether darker, the greenish brown predominating over the white on the abdomen and especially on the lower tail-coverts, whilst the reverse is the case in *G. striolatus*. As a rule in the present species the rump is greenish yellow, not clear yellow or orange. The upper parts are generally green as in *G. striolatus*, but are sometimes darker and sometimes bronzy green.

Irides dull lake; bill above dark, below yellowish, orbits slate-lavender; legs greenish (*Wardlaw Ramsay*).

Length 13; tail 4·2; wing 5·6; tarsus 1·1; bill from gape 1·6.

Distribution. Throughout Arrakan, Pegu and Tenasserim, and down the Malay Peninsula to Salanga and into Siam.

950. **Gecinus occipitalis.** *The Black-naped Green Woodpecker.*

Picus occipitalis, *Vigors, P. Z. S.* 1830, p. 8; *Blyth, J. A. S. B.* x, p. 922; xii, p. 1002; xiv, p. 191.
Picus barbatus, *Gray in Hardw. Ill. Ind. Zool.* i, pl. xxxi, fig. 2 (1830–32).
Gecinus occipitalis, *Blyth, Cat.* p. 58; *Horsf. & M. Cat.* ii, p. 661; *Jerd. B. I.* i, p. 287; *Godw.-Aust. J. A. S. B.* xxxix, p. 267; xlv, p. 70; *Cock & Marsh. S. F.* i, p. 350; *Hume, S. F.* iii, p. 70; v, p. 26; xi, p. 62; *id. Cat.* no. 172; *Blyth & Wald. Birds Burm.* p. 76; *Hume & Dav. S. F.* vi, p. 137; *Oates, S. F.* viii, p. 165; *Scully, ibid.* p. 248; *Bingham, S. F.* ix, p. 164; *Oates, B. B.* ii, p. 51; *Marshall, Ibis,* 1884, p. 410; *Salvadori, Ann. Mus. Civ.*

Gen. (2) iv, p. 579; v, p. 566; *Hargitt, Ibis,* 1888, p. 6; *id. Cat. B. M.* xviii, p. 56; *Oates in Hume's N. & E.* 2nd ed. ii, p. 299; *Sharpe, Yarkand Miss., Aves,* p. 109.

Mong-chok, Lepcha.

Coloration. Male. Forehead and crown crimson; plumes over nostrils, upper lores, a line above the grey supercilium, occiput and short occipital crest, and a broad malar stripe from the lower mandible black; the occiput and malar stripe more or less mixed with grey; sides of head, including lower lores, supercilia, area below eye, and ear-coverts, ashy grey; sides of neck, hind neck, and back moderately bright green, generally tinged with bright yellow on the rump and occasionally with orange, but sometimes only brighter green; secondary wing-coverts, tertiaries, and outer webs of secondaries yellowish olive; quills dark brown, the inner webs, except near the tips, with imperfect white bars, the outer webs of the primaries with equidistant white spots, primary-coverts barred; tail-feathers black, with greenish edges near the base, the median pair with imperfect greenish-drab bars; breast green, duller and more olivaceous than the back, passing into greyish white on the throat and chin, and into ashy grey or sometimes brownish grey on the abdomen; lower wing-coverts banded white and brown.

Female. Whole forehead, crown, and nape black, the sides of the feathers grey, producing a striped appearance.

The young is duller in colour and the lower plumage and tail-feathers are barred.

Bill dull blackish brown; eyelids purplish brown; iris dull red; legs dull green; claws greenish horn-colour (*Oates*).

Length 12·5; tail 4·7 (3·8 to 5·1); wing 5·6; tarsus 1·2; bill from gape 1·7.

Distribution. From Murree and Kashmir throughout the Himalayas to Assam and Yunnan at moderate elevations, up to about 8000 feet to the westward and 5000 in Sikhim; also the countries between Assam and Burma, throughout Burma and in Siam.

Habits, &c. Breeds in the Himalayas from the middle of May to the middle of June, laying four, five, or sometimes six white eggs, moderately glossy or very polished, in a hole, usually bored in the stem of a tree, but much nearer the ground than in the case of *G. squamatus.* The average size of the eggs is 1·14 by ·88.

951. **Gecinus chlorolophus.** *The Small Himalayan Yellow-naped Woodpecker.*

Picus chlorolophus, *Vieill. Nouv. Dict. d'Hist. Nat.* xxvi, p. 78 (1818).
Picus nepaulensis, *Gray in Hardw. Ill. Ind. Zool.* i, pl. xxxi, fig. 1 (1830–32).
Gecinus chloropus, *Blyth, Cat.* p. 58; *Tytler, A. M. N. H.* (2) xiii, p. 367 (1854).
Chrysophlegma chlorolophus, *Horsf. & M. Cat.* p. 662; *Jerdon, B. I.* i, p. 289; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; xlv,

pt. 2, p. 70: *Hume, S. F.* iii, p. 71; v, p. 26; xi, p. 62; *id. Cat.* no. 174; *Blyth & Wald. Birds Burm.* p. 76; *Hume & Dav. S. F.* vi, p. 138; *Ball, S. F.* vii, p. 206; *Scully, S. F.* viii, p. 249; *Bingham, S. F.* ix, p. 164; *Oates, B. B.* ii, p. 45; *C. H. T. Marshall, Ibis,* 1884, p. 410; *Salvadori, Ann. Mus. Civ. Gen.* 2, iv, p. 578; v, p. 565; vii, p. 379.

Gecinus chlorolophus, *Hargitt, Ibis,* 1888, p. 184; *id. Cat. B. M.* xviii, p. 59; *Oates in Hume's N. & E.* ii, p. 300.

The Lesser Yellow-naped Woodpecker, Jerdon.

Coloration. Male. Nasal plumes and a line above lores black; forehead, a stripe from the forehead on each side of the crown to the nape, and the tips of the feathers forming a malar stripe on each side of the lower mandible crimson; crown of head olive-green, some of the occipital feathers occasionally tipped crimson; nuchal crest of loose-textured feathers ending in filaments golden to orange-yellow; back, wing-coverts, rump, and upper tail-coverts bright yellowish green; lores and a band beneath the eye and ear-coverts, also a narrow line over the eye, whitish; ear-coverts pale olive; quills dark brown, the inner webs, except near the tips, with squarish white spots; outer webs of primaries near their base, and outer webs of secondaries throughout red bordered with green; a few small white spots (sometimes wanting) on outer webs of primaries: tail black, the median feathers with bronzy-green edges near the base; lower parts olive; chin, throat, abdomen, under wing-coverts, and lower tail-coverts barred with white or greenish white.

Female. No crimson on the forehead, sides of head above the eye, nor on malar stripe, but there is a band on each side of the occiput; otherwise the plumage resembles that of the male. The young are duller, the lower parts dusky, not green, and barred or spotted throughout.

Bill yellowish-green horny, culmen and tip dark plumbeous; irides carmine-red; orbital skin bluish plumbeous; tarsi dingy green; claws pale horny (*Scully*).

Length 10·5; tail 4; wing 5·4; tarsus ·9; bill from gape 1·25.

Distribution. The lower Himalayas up to about 10,000 feet, as far west as Chamba, also Assam, Cachar, Tipperah, Manipur, Arrakan, Burma generally, and Tenasserim. A specimen referred to this species has been obtained from Perak. This Woodpecker has been reported from Orissa, but its occurrence in the Indian Peninsula must be regarded as doubtful.

Habits, &c. Like other members of the genus, this green Woodpecker sometimes feeds on the ground. In Burma it is found both in thick forests and open tree-jungle. The nest has been taken in Sikkim in April, and contained three eggs, one measuring 1·14 by ·72. The nest-hole was 14 feet from the ground in the stem of a dry tree, the eggs white and glossy.

952. **Gecinus chlorogaster.** *The South-Indian Yellow-naped Woodpecker.*

Brachylophus mentalis, *apud Jerdon, Madr. Jour. L. S.* xi, p. 214 (1840), *nec* Picus mentalis, *Temm.*
Picus chlorigaster, *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 139 (1844).
Picus (Chloropicus) xanthoderus, *Malherbe, Rev. Zool.* 1845, p. 402.
Gecinus chlorigaster, *Blyth, J. A. S. B.* xv, p. 16; *Hargitt, Ibis,* 1888, p. 180; *id. Cat. B. M.* xviii, p. 62.
Gecinus chlorophanes, *Blyth, Cat.* p. 59; *Layard, A. M. N. H.* (2) xiii, p. 448 (1854).
Chrysophlegma chlorophanes, *Jerdon, B. I.* i, p. 290; *Holdsworth, P. Z. S.* 1872, p. 428: *Legge, Ibis,* 1874, p. 15, 1875, p. 283; *Bourdillon, S. F.* iv, p. 390.
Chrysophlegma xanthoderus, *Legge, Birds Ceyl.* p. 197.
Chrysophlegma chlorigaster, *Hume, S. F.* vii, p. 517: *id. Cat.* no. 175; *Butler, S. F.* ix, p. 386; *Davidson, S. F.* x, p. 298; *Davison, ibid.* p. 355; *Taylor, ibid.* p. 457; *Barnes, Birds Bom.* p. 117.

The Southern Yellow-naped Woodpecker, Jerdon; *Paehcha kœralla,* Cingalese.

Coloration. Male. Nasal plumes brownish black; forehead, crown, occiput (feathers elongated), and malar stripe crimson, only the tips of the feathers red and the dusky bases conspicuous; nuchal crest yellow, the feathers loose-textured; back, scapulars, rump, and upper tail-coverts green; wing-coverts yellow bronze-green, tinged with red towards the shafts; quills brownish black, the inner webs, except near the tips, with round white spots: outer webs of primaries near base and of secondaries throughout red, bordered with bronze-green, a few small white spots on outer webs of primaries; tail black or brownish black; lores whitish; sides of head and neck and all lower parts dull olive, spotted or barred with white on the chin, throat, and abdomen, or in the young almost throughout, but generally the breast is unspotted.

Female. Forehead and crown dark olive, the occiput alone being crimson, and there is no malar stripe; otherwise as in the male.

Bill slaty greenish, yellow beneath; legs dull green; irides reddish brown (*Jerdon*).

Length 9·5; tail 3·25 (varying from 2·9 to 5·5); wing 4·65; tarsus ·85; bill from gape 1·05.

Distribution. The hills in the neighbourhood of the Western coast of India as far north as Khandesh, also in the greater part of Ceylon. This Woodpecker is not found above 5000 feet on the Nilgiris. It occurs in the Wynaad and Mysore, but not to the eastward.

Habits, &c. This bird has a plaintive call, which it frequently utters when perched on the upper branch of a high tree. It often, like other *Gecini*, feeds on fallen trees on the ground, and according to Layard breaks into dried cowdung in search of insects. Legge found ants besides coleoptera in the stomach of those he examined.

953. **Gecinus puniceus.** *The Crimson-winged Green Woodpecker.*

Picus puniceus, *Horsf. Trans. Linn. Soc.* xiii, p. 176 (1821).
Gecinus puniceus, *Blyth, Cat.* p. 59; *Hargitt, Ibis,* 1888, p. 176; *id. Cat. B. M.* xviii, p. 64.
Venilia punicea, *Horsf. & M. Cat.* ii, p. 664.
Chrysophlegma puniceus, *Blyth, Birds Burm.* p. 77; *Hume, S. F.* iii, p. 324; *Oates, B. B.* ii, p. 44.
Callolophus puniceus, *Hume & Dav. S. F.* vi, p. 139; *Hume, Cat.* no. 175 ter.

Coloration. Male. Nasal plumes and a line over the lores brownish black; forehead, crown, nape, and broad malar stripe crimson, this colour descending for some distance behind the ear-coverts; nuchal crest of loose-textured feathers yellow; back and scapulars green, more or less olivaceous; lower back and rump the same, the feathers edged with pale yellow; wing-coverts, whole outer webs of secondaries, and basal portion of outer webs of primaries deep crimson; tips of secondaries and tertiaries green; remainder of quills dark brown, outer webs of primaries sometimes with a few white spots; inner webs of all with larger white spots or imperfect bars; tail black; sides of head dull olive; chin and throat light brown or brownish olive; sides of neck and lower parts olive-green; the flanks spotted with white.

The *female* has no malar band, but otherwise precisely resembles the male. Young birds are duller in colour and have the lower parts browner and spotted more or less throughout.

Upper mandible black; lower mandible and edges of upper at gape dark greenish yellow; iris crimson; orbital skin lavender-blue; legs and feet pale green (*Davison*).

Length 10·5; tail 3·75; wing 5·15; tarsus ·9; bill from gape 1·4.

Distribution. The Malay Peninsula, extending into Southern Tenasserim as far north as Tavoy; and to the southward to Sumatra, Java, and Borneo.

Habits, &c. According to Davison this Woodpecker inhabits evergreen forests. It is very noisy in the evening and has a peculiar note, which it utters from the top of a high tree. It is usually seen singly and has not been observed on the ground.

954. **Gecinus nigrigenis.** *The Red-rumped Green Woodpecker.*

Gecinus erythropygius, *apud Wardl. Ramsay, P. Z. S.* 1874, p. 212, pl. xxxv; *Walden, Ibis,* 1875, pp. 148, 463; *id. in Blyth's Birds Burm.* p. 76; *Oates, S. F.* x, p. 191; *id. B. B.* ii, p. 52; *Hargitt, Ibis,* 1888, p. 189, *nec Elliot.*
Gecinus nigrigenis, *Hume, P. A. S. B.* 1874, p. 106; *id. S. F.* ii, pp. 444, 471; *id. Cat.* no. 171 ter; *Hume & Dav. S. F.* vi, p. 136; *Bingham, S. F.* ix, p. 163; *Hargitt, Cat. B. M.* xviii, p. 67; *Oates in Hume's N. & E.* 2nd ed. ii. p. 300.

Coloration. Male. Cap including the sides of the head and nuchal crest black, except an area of variable size on the crown, which is crimson; back, scapulars, wing-coverts, and upper tail-coverts yellowish green; rump bright scarlet, sometimes mixed with yellow (the latter may show immaturity); quills dark brown, the inner webs with white bands, outer webs of primaries with white spots, outer webs of secondaries throughout and of primaries near the base yellowish green; tail black, the median feathers with green edges towards the base; chin, throat, sides of neck, and upper breast yellow, shading off on the lower breast into the colour of the abdomen, which is whitish with scale-like brown markings formed by intramarginal bands and shaft-lines to the feathers, these markings being broader on the lower tail-coverts.

The *female* wants the red of the crown, but otherwise resembles the male. In some specimens of both sexes there is a white or yellow line behind the eye.

Bill dark horny: iris sulphur-yellow; legs and feet dark green; claws horny (*Bingham*). The basal portion of the lower mandible is yellow to a variable extent.

Length 12·75; tail 5; wing 6·3; tarsus 1·2; bill from gape 1·6.

Distribution. From Karennee and Toungngoo in the north to Southern Tenasserim. A specimen has also been received at the British Museum from Siam. The true *G. erythropygius*, from Cochin China and Laos, has a white bill.

Habits, &c. This beautiful green Woodpecker keeps to the drier and more thinly wooded Tenasserim hills, and is chiefly found in eng- (*Dipterocarpus*) and bamboo-jungle. According to Bingham its note is peculiar and consists of 12 to 15 whistled notes, the first high and shrill, the others descending in the scale. The nest, containing two glossy white eggs measuring 1·18 by ·93, was found by the same observer in a pynkado-tree (*Xylia*) on March 18th.

Genus **CHRYSOPHLEGMA**, Gould, 1849.

Bill more curved than in *Gecinus*; culmen blunt, nasal ridge almost obsolete. A moderately long nuchal crest. The coloration above is similar to that of *Gecinus*, green being the prevailing tint, the crest is yellow and the quills barred with rufous. Below, except on the throat, the colour is nearly uniform. The sexes are distinguished by difference of colour in the chin and malar region, not on the crown. This genus ranges from the Himalayas to Borneo and Java.

Key to the Species.

Upper surface of wings green	*C. flavinucha*, p. 28.
Upper surface of wings red	*C. humii*, p. 28.

955. **Chrysophlegma flavinucha.** *The Large Yellow-naped Woodpecker.*

Picus flavinucha, *Gould, P. Z. S.* 1833, p. 120; *Blyth, J. A. S. B.* xii, p. 1003.
Dryotomus flavigula, *Hodgson, J. A. S. B.* vi, p. 106.
Gecinus flavinucha, *Blyth, Cat.* p. 58.
Chrysophlegma flavinucha, *Gould, B. Asia*, vi, pl. xxxvi; *Horsf. & M. Cat.* ii, p. 662; *Jerdon, B. I.* i, p. 289; *id. Ibis*, 1872, p. 9; *Hume & Oates, S. F.* iii, p. 71: *Hume & Inglis, S. F.* v, p. 26; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; *Blyth & Wald. Birds Burm.* p. 76; *Hume & Dav. S. F.* vi, p. 137; *Hume, Cat.* no. 173; *id. S. F.* xi, p. 62; *Oates, B. B.* ii, p. 43; *Hargitt, Ibis*, 1886, p. 262; *id. Cat. B. M.* xviii, p. 127.

Mong-kli-ong, Lepcha.

Coloration. Male. Top and sides of head olive, more or less passing into rufous-brown on the forehead and crown and sometimes on the occiput, ear-coverts a little paler; nuchal crest of loose-textured feathers orange or golden yellow; whole back and outer surface of wings glossy yellowish green; quills dark brown, broadly banded on both webs, except towards the tips, with pale chestnut; tail black, the middle feathers with olive fringes towards the base; malar region, chin, and throat pale yellow; sides of neck deep olive; feathers of fore neck white, each with a large terminal olive spot, forming a mixed pattern of olive and white; breast olive, passing on the abdomen into ashy grey or ashy brown.

Female. The malar region, chin, and throat rufous brown instead of yellow.

Bill dusky bluish white; iris red; eyelids and gape greenish blue; legs dusky blue; claws horn-colour (*Oates*).

Length 13; tail 5; wing 6·5; tarsus 1·1; bill from gape 1·6.

Distribution. The Himalayas as far west as Mussooree, chiefly between about 2000 and 7000 feet. This bird has not been recorded further west, but to the eastward it ranges through Assam, Cachar, Arrakan, Pegu, Karennee, and Northern Tenasserim to a little south of Moulmein.

Habits, &c. This Woodpecker inhabits forests and feeds frequently on the ground. The nidification has not been observed.

956. **Chrysophlegma humii.** *The Chequered-throated Woodpecker.*

Gecinus mentalis, *apud Blyth, Cat.* p. 59 (*nec* Picus mentalis, *Temm.*).
Chrysophlegma mentalis, *apud Blyth, Birds Burma*, p. 76.
Callolophus mentalis, *apud Hume & Dav. S. F.* vi, p. 138; *Hume, Cat.* no. 175 bis; *Oates, B. B.* ii, p. 46.
Chrysophlegma squamicolle, *apud Hargitt, Ibis*, 1886, p. 269 (*nec* Picus squamicollis, *Lesson*).
Chrysophlegma humii, *Hargitt, Ibis*, 1889, p. 231; *id. Cat. B. M.* xviii, p. 126.

Coloration. Male. Top and sides of head olive-green; occipital crest of loose-textured feathers bright yellow; back, scapulars, tertiaries, and rump olive-green, paler than the head; wing-coverts, outer borders of secondaries throughout, and of primaries near base dull red; remainder of wing-feathers brown, secondaries broadly barred on the inner webs and primaries on both webs, except near the tips, with rufous; tail black; a broad malar band from the lower mandible dark olive, sometimes brown, spotted with white; feathers of the chin and throat white, each with a broad brown shaft-stripe; sides of neck, fore neck, and upper breast bright chestnut, this colour passing round to the hind neck behind the crest; lower parts from breast olive-green, rather more olive than the back. Under wing-coverts barred brown and pale rufous or dirty orange.

In the *female* the chin and malar band are chestnut like the breast and not spotted.

Upper mandible dull black, lower mandible and edges of upper near nostrils pale plumbeous; irides deep red; orbital skin green: legs and feet green; claws plumbeous.

Length 11; tail 3·9; wing 5·25; tarsus ·9; bill from gape 1·5.

Distribution. Malayan Peninsula, Borneo and Sumatra, extending north into the southern extremity of the Tenasserim provinces, where this Woodpecker is rare. The true *C. mentale*, long supposed to be identical with the present species, is peculiar to Java.

Genus **CALLOLOPHUS**, Salvadori, 1874.

This genus was proposed for three species: *C. puniceus*, which belongs to *Gecinus*, *C. mentalis* (*Chrysophlegma humii*), and *C. malaccensis*, no type being named. The last-named species has been placed in *Chrysophlegma* by Hargitt, but it and its near ally *C. miniatus*, which is confined to Java, exhibit a widely different coloration from that characteristic of *Chrysophlegma*, the plumage being barred both above and below. This is, I think, especially amongst Woodpeckers, a more important generic distinction than slight differences in the form of the bill.

Callolophus has a long and broad occipital crest, and the bill is shorter, more curved, and broader at the base than that of *Chrysophlegma*.

957. **Callolophus malaccensis.** *The Banded Red Woodpecker.*

Picus malaccensis, *Lath. Ind. Orn.* i, p. 241 (1790); *Blyth, J. A. S. B.* xiv, p. 192.
Gecinus malaccensis, *Blyth, Cat.* p. 59.
Chrysophlegma malaccensis, *Hume, S. F.* iii, p. 324.
Callolophus malaccensis, *Salvad. Ann. Mus. Civ. Gen.* v, p. 50: *Hume & Dav. S. F.* vi, pp. 140, 501; *Hume, Cat.* no. 175 quat.: *Oates, B. B.* ii, p. 47.
Chrysophlegma malaccense, *Hargitt, Ibis*, 1886, p. 276; *id. Cat. B. M.* xviii, p. 122.

Coloration. Male. Nasal plumes brown; forehead, lores, crown, occiput, and upper part of long occipital crest dull crimson; lower and longer feathers of the crest pale yellow; on the sides of the head the feathers are brown, tipped with crimson, sometimes with terminal whitish spots; hind neck and back dull olive-green with wavy buff or yellow cross-bars; the feathers of the lower back and rump edged with pale yellow; upper tail-coverts brown with a few buff spots; sides of neck and of back more or less tinged with crimson; scapulars and whole outer surface of wing dull crimson like the head; quills dark brown, the inner webs of all with pale rufous bars, outer webs of primaries with rufous spots; chin, throat, and sides of neck light rufous brown, sometimes speckled with buff and dusky, and passing on the breast into the colour of the remaining underparts, which are marked with alternate undulating bars of dark brown and rufous white.

In the *female* there is no crimson on the forehead or on the sides of the head in front of the ear-coverts, these with the chin and throat are dark brown and speckled, each feather tipped dusky with a terminal white spot. Young birds are dull pale brown beneath with ill-marked dark bars.

Upper mandible black, lower bluish white; irides red; eyelids grey; legs and feet pale dingy green (*Davison*).

Length 10; tail 2·6; wing 5; tarsus ·9; bill from gape 1·2.

Distribution. Malay Peninsula, Sumatra, and Borneo, extending into Southern Tenasserim as far north as Tavoy.

Habits, &c. According to Davison this Woodpecker is found in evergreen forests and mangrove swamps. It is never seen on the ground, and is generally solitary.

Genus **GECINULUS**, Blyth, 1845.

Only three toes present, the hallux or inner posterior digit wanting. Bill short, compressed; culmen blunt, nearly straight; nasal ridge obsolete; nostrils close to base of bill; nasal plumes short. Tail-feathers broad, not acuminate; outer pair longer than coverts, but much shorter than the rest, which are regularly graduated. Crest short, inconspicuous.

Plumage of head pale and yellowish, of upper parts red or green, of lower parts uniform olive or brown. Males with a red crown, females without. Two species, both within our area.

Key to the Species.

Above dull red........................	*G. grantia*, p. 30.
Above green..........................	*G. viridis*, p. 31.

958. **Gecinulus grantia.** *The Northern Pale-headed Woodpecker.*

Picus (Chrysonotus) grantia, *McClelland, P. Z. S.* 1839, p. 165.

Gecinulus grantia, *Blyth, J. A. S. B.* xiv, p. 192; *id. Cat.* p. 60; *Horsf. & M. Cat.* ii, p. 663; *Jerdon, B. I.* i, p. 292; *Bulger, Ibis,* 1869, p. 157; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 155; xlv, pt. 2, p. 70; *Hume & Inglis, S. F.* v, p. 26; *Hume, Cat.* no. 177; *id. S. F.* xi, p. 63; *Hargitt, Cat. B. M.* xviii, p. 134.

The Pale-headed Woodpecker, Jerdon; *Ka-ter,* Lepcha; *Koria,* Dafla.

Coloration. Male. Forehead, lores, cheeks, and chin light brown; crown pink, the feathers edged with deeper red; occiput and nape with the ear-coverts dull olivaceous yellow; upper parts from neck dull red, tail-feathers edged with the same; primary-coverts dull yellow; quills and tail-feathers brown, barred or spotted on both webs with rufous white; lower parts dark olive, paler and yellower on throat and light brown on the chin; under wing-coverts and axillaries dusky brown with rufous spots.

In the *female* the red of the crown is wanting, and the whole head is dull yellow.

Bill bluish white, darker blue at the base; irides red; legs pale dusky green (*Jerdon*).

Length 10; tail 3·7; wing 5; tarsus ·95; bill from gape 1·1.

Distribution. Common in the Eastern Himalayas, chiefly between 2000 and 5000 feet as far west as Nepal; found also in Assam, the hill-ranges to the south, Cachar and Manipur. A specimen is also recorded from Laos (Siam).

Habits, &c. According to Jerdon this Woodpecker has a squeaking note. Hume met with it in Manipur in pairs.

959. **Gecinulus viridis.** *The Southern Pale-headed Woodpecker.*

Gecinulus viridis, *Blyth, J. A. S. B.* xxxi, p. 341 (1862); *Hume, S. F.* ii, p. 472, ix, p. 112; *id. Cat.* no. 177 bis; *Hume & Oates, S. F.* iii. p 71; *Blyth & Wald. Birds Burm.* p. 77; *Hume & Dav. S. F.* vi, p. 144; *Bingham, S. F.* ix, p. 164; *Oates, B. B.* ii, p. 41; *Hargitt, Cat. B. M.* xviii, p. 136.

Coloration. Male. Forehead, lores, and sides of head yellowish brown; sides of neck more yellow, this colour extending round the neck behind the occipital crest, which, with the crown, is bright crimson; back, scapulars, wing-coverts, and outer margins of wing-feathers, except of primaries towards their tips, yellowish olive, the rump-feathers the same, but narrowly edged and tipped with scarlet or orange; quills brown, with white spots on the inner webs, and sometimes indistinct pale spots on the outer; tail-feathers brown, the outer webs bordered with olive-yellow near the base, the inner webs of all but the middle pair spotted with white; lower parts dark olive-green to greenish brown; throat more yellow.

Female. No red on head, which is yellowish brown throughout, much yellower on the nape, so as to have a broad yellow collar.

Bill pale bluish white, strongly tinged with blue at base; irides brown; legs, feet, and claws pale dirty green (*Davison*).

Length 10·5; tail 3·9; wing 5·2; tarsus 1; bill from gape 1·2.

Distribution. Common in the Pegu hills between Thayet Myo and Toungngoo, also throughout Tenasserim. The most southern locality recorded is Kussoom, a little north of Junk Ceylon.

Habits, &c. This Woodpecker inhabits both deciduous and evergreen forest, but is chiefly found on and amongst bamboos. According to Davison it occurs singly or in pairs, never in parties.

Genus **HYPOPICUS**, Bonap., 1854.

Bill slender, compressed, truncated: culmen straight, angulate; nasal ridge strongly marked, but low down near the commissure and not extending more than halfway along the bill; nostrils basal, nasal plumes short; gonys long, chin-angle near to the gape, much concealed by bristles: fourth (outer posterior) toe slightly longer than third (outer anterior). Head scarcely crested. Outer pair of tail-feathers shorter than coverts. Plumage soft, black and white above, chestnut below; crown of head red in males, black spotted with white in females.

Only two species are known, one inhabits the Himalayas, the other Northern China.

960. **Hypopicus hyperythrus.** *The Rufous-bellied Pied Woodpecker.*

Picus hyperythrus, *Vigors, P. Z. S.* 1831, p. 23: *Blyth, J. A. S. B.* xiv, p. 196; *id. Cat.* p. 63: *Blanford, J. A. S. B.* xli, pt. 2, p. 43.

Hypopicus hyperythrus, *Bonap. Consp. Volucr. Zygod.* p. 8; *Horsf. & M. Cat.* ii, p. 675; *Jerdon, B. I.* i, p. 276: *id. Ibis*, 1872, p. 7; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 155; *Hume, Cat.* no. 161; *id. S. F.* xi, p. 59; *Hargitt, Cat. B. M.* xviii, p. 199; *Oates in Hume's N. & E.* 2nd ed. ii. p. 301; *Sharpe, Yark. Miss., Aves*, p. 109.

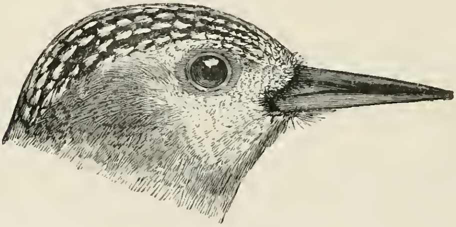

Fig. 11.—Head of *H. hyperythrus*, ♀.

Coloration. Male. Nasal plumes black, white at the base; base of forehead, sides of face, and chin grey (mixed black and white): lores, a stripe below the eye and a spot above and behind the eye pure white; crown and nape crimson; upper plumage from neck to rump broadly barred black and white; quills black, spotted on both webs and tipped with white, inner webs of primaries unspotted near the tips; four middle tail-feathers black, the next pair black with fulvous-white spots on the outer webs; the two outer large feathers on each side barred black and fulvous white; sides of neck and lower parts from throat bright chestnut; vent and lower tail-coverts light crimson; thigh-coverts and under wing-coverts banded black and white; axillaries white.

Female. The crown and nape black, spotted with white. In young birds there are bars on the lower plumage.

Bill black above, whitish beneath; legs plumbeous (*Jerdon*). Bill pale yellow beneath (*Godwin-Austen*).

Length 8; tail 3·5; wing 5; tarsus 0·85; bill from gape 1.

Distribution. Throughout the Himalayas from Murree to Sikhim and probably to Eastern Tibet, also in the Khási, Nága, and Manipur hills, at 4000 to 5000 feet elevation. This Woodpecker has been obtained in Cochin China, but not in Burma. It ranges to a considerable elevation on the Himalayas, and is the commonest Woodpecker in the pine-forests of Sikhim, at 9000–12,000 feet above the sea.

Habits, &c. The nest has been observed by Col. C. H. T. Marshall at Murree, and the eggs taken towards the latter end of April. The nests were as usual mere holes in trees, and the eggs, deposited on the bare wood, were regular ovals, pure white, measuring about ·87 by ·67.

Genus **DENDROCOPUS**, Koch, 1816.

Bill wedge-shaped, upper mandible compressed towards the end; culmen angulate, straight or very slightly curved, nasal ridge commencing halfway between culmen and commissure and extending more than half the length of the bill; nostrils concealed by plumes, chin-angle similarly concealed; gonys sharply angulate; fourth (outer hind) toe longer than third (outer fore); occiput slightly crested, more in some species than in others; wing rather pointed, the primaries exceeding the secondaries by about the length of the culmen. Upper plumage black and white, more or less in bars; lower plumage white or fulvous, generally streaked brown or black. Crown and occiput wholly or partly red in males, black or brown in females.

A large genus, of which the type is the European *Picus major*, and which ranges over almost the whole of Europe, Asia, and North America. Ten species occur within Indian limits.

Key to the Species.

- *a.* Middle tail-feathers entirely black, outer barred white.
  - *a'.* Back entirely black.
    - *a''.* Lower parts not striated.
      - *a*³. Scapulars black.
        - *a*⁴. Under tail-coverts red, not abdomen; crown red in ♂, black in ♀ .... *D. himalayensis*, p. 34.

b^4. Abdomen and under tail-coverts red; crown always black; occiput red in males only.......... *D. cabanisi*, p. 35.
b^3. Scapulars white .... *D. sindianus*, p. 36.
b''. Lower parts striated; occiput red in ♂, black in ♀.
c^3. Larger, wing 5; no red gorget .... *D. darjilensis*, p. 37.
d^3. Smaller, wing 4; no red gorget .. *D. cathpharius*, p. 37.
e^3. Smaller, wing 4; a red gorget .... *D. pyrrhothorax*, p. 38.
b'. Back transversely barred with white.
c''. Crown and occiput crimson in ♂, black in ♀.
f^3. Throat and fore neck uniform; breast spotted .... *D. macii*, p. 39.
g^3. All lower parts except chin striated *D. atratus*, p. 40.
d''. Crown umber-brown in both sexes; occiput crimson and yellow in ♂, dull yellow in ♀ .... *D. auriceps*, p. 40.
b. All tail-feathers parti-coloured black and white.
c'. Small spots on breast.
e''. Crown red........................ *D. pectoralis* ♂, p. 41.
f''. Crown black...................... *D. pectoralis* ♀, p. 41.
d'. Spots on breast broader than white spaces between.
g''. Crown and occiput red .... *D. andamanensis* ♂, p. 42.
h''. Crown and occiput brown .... *D. andamanensis* ♀, p. 42.

961. **Dendrocopus himalayensis.** *The Western Himalayan Pied Woodpecker.*

Picus himalayensis, *Jard. & Selby, Ill. Orn.* iii, pl. cxvi (c. 1835); *Hume, Cat.* no. 154; *Wardl. Rams. Ibis*, 1880, p. 50; *Biddulph, Ibis*, 1881, p. 48; *id. S. F.* ix, p. 313; *Scully, Ibis*, 1881, p. 429; *id. S. F.* x, p. 101; *C. H. T. Marshall, Ibis*, 1884, p. 410.
Picus himalayanus, *Gray, Gen. B.* ii, p. 435 (1845); *Blyth, J. A. S. B.* xvi, p. 466; *id. Cat.* p. 62; *Horsf. & M. Cat.* ii, p. 670; *Adams, P. Z. S.* 1858, p. 475, partim; 1859, p. 173; *Jerdon, B. I.* i, p. 269; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 20; *Cock & Marsh. S. F.* i, p. 350; *Beavan, Ibis*, 1869, p. 412; *Jerdon, Ibis*, 1872, p. 6; *Hume & Henders. Lah. to Yark.* p. 179; *Brooks, S. F.* iii, p. 232; *Wardl. Rams. Ibis*, 1879, p. 447.
Dendrocopus himalayensis, *Hargitt, Cat. B. M.* xviii, p. 220; *Oates in Hume's N. & E.* 2nd ed. ii, p. 301; *Sharpe, Yark. Miss., Aves*, p. 110.

The Himalayan Pied Woodpecker, Jerdon; *Turkán*, Chamba.

Coloration. Male. Nasal plumes black, white at base; forehead brownish white; crown and occiput crimson, the feathers dark grey at the base, then black and tipped with red; lores, a narrow supercilium, and the sides of the face and neck white, often fulvescent, and the ear-coverts in part black; a black band from the lower mandible down each side of the neck, joined to the nape by a cross black band behind the ear-coverts; hind neck, back, scapulars, rump, and upper tail-coverts glossy black; wings and most of the wing-coverts black, the innermost median and greater coverts wholly or chiefly white, and the quills spotted with white on both webs, the spots forming interrupted bands; the four median tail-feathers black; the others banded fulvous white and black, and sometimes having the outer webs almost or entirely

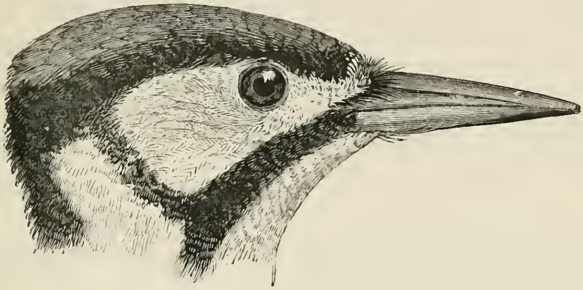

Fig. 12.—Head of *D. himalayensis* ♂.

white; lower parts light brownish grey, sometimes almost white; the lower abdomen more fulvous; vent and lower tail-coverts pale crimson.

In the *female* the crown and occiput are black, like the back.

Bill leaden grey; upper mandible blackish; irides red-brown: legs and feet dark greenish brown.

Length 9·5; tail 3·5; wing 5·2; tarsus ·9; bill from gape 1·35.

Cashmere birds are much paler beneath than those from other localities, and are often almost white below. A male skin in the Hume Collection from Kotgarh has the lower parts from the breast suffused with red.

Distribution. The Western Himalayas from Kumaun to Murree, also Gilgit to the north, and Kuram in Afghanistan to the west. This Woodpecker breeds according to Hume between 3000 and 8000 feet, but Jerdon found it common up to 10,000, Biddulph met with it between 9000 and 10,000 in Gilgit, and Stoliczka up to 11,000 in Chini.

Habits, &c. Breeds from the middle of April to the end of May in holes in trees as usual, trunks of oaks being often selected. The eggs are 4 or 5 in number, glossy and white, and measure about 1 inch by ·75.

962. **Dendrocopus cabanisi.** *The Chinese Pied Woodpecker.*

Picus cabanisi, *Malherbe, J. f. Orn.* 1854, p. 172.
Picus mandarinus, *Malh. Bull. Soc. d'Hist. Nat. Moselle*, viii, p. 17 (1857); *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 194; *Hume, S. F.* v, p. 53, xi, p. 56; *id. Cat.* no. 155 bis.
Dendrocopus cabanisi, *Hargitt, Cat. B. M.* xviii, p. 218.

This resembles *D. himalayensis* on the upper surface, except in having the crown of the male black and the crimson confined to the occiput. Below there is more difference. In the present species the black malar band is much broader, and continued to the side of the breast, the feathers of the breast between the ends of the black bands are tipped with red; the chin, throat, and breast are fulvous brown; abdomen and under tail-coverts crimson; edge of wing, under wing-coverts, and axillaries white.

Bill dark plumbeous (*G.-A.*). Length 8; tail 3·4; wing 5; tarsus ·95; bill from gape 1·3.

Distribution. Throughout China; two male specimens were obtained by Godwin-Austen at Gonglong in the Manipur hills. This Woodpecker appears not to have been observed elsewhere within Indian limits.

963. **Dendrocopus sindianus.** *The Sind Pied Woodpecker.*

Picus assimilis, *Natt.*, *Bonap. Consp. Volucr. Zygod.* p. 8 (1854; descr. nulla).
Picus scindeanus, *Gould, Horsf. & M. Cat.* ii. p. 671 (1856–58); *Jerdon, B. I.* i, p. 273; *Hume, Ibis,* 1870, p. 529; *Jerdon, Ibis,* 1872, p. 7; *Hume & Henders. Lah. to Yark.* p. 179, pl. ii; *Hume, S. F.* i, p. 170; *Barnes, S. F.* ix, pp. 215, 453; *Murray, Vert. Zool. Sind,* p. 113; *St. John, Ibis,* 1889, p. 157.
Picus sindianus, *Blanf. East. Pers.* ii, p. 132; *Hume, Cat.* no. 158; *Doig, S. F.* viii, p. 370; ix, p. 279; *Swinhoe, Ibis,* 1882, p. 102; *Barnes, Birds Bom.* p. 112; *Oates in Hume's N. & E.* 2nd ed. ii, p. 303.
Dendrocopus scindeanus, *Hargitt, Cat. B. M.* xviii, p. 227.

Coloration. Male. Nasal plumes white with black tips; forehead white, sometimes buff or light brown; crown and occiput crimson; a malar band from lower mandible down the neck, back of neck, back, rump, and upper tail-coverts black; lores, supercilia, sides of head and neck, scapulars and innermost median and greater wing-coverts, together with the lower parts from the chin to the abdomen, under wing-coverts and axillaries, white; lower abdomen, vent, and under tail-coverts crimson. Wings and tail similar to those of *D. himalayensis*, except that the wing-feathers are brown, that the white spots on both webs are much larger, and the unspotted tips of the primaries shorter. In some specimens too the three middle pairs of tail-feathers are entirely black. The wing is differently shaped, being shorter and rounder.

In the *female* the crown and occiput are black.

Bill bluish plumbeous; irides dark maroon; legs and feet greyish plumbeous (*Butler*); irides crimson (*Barnes*).

Length 8·5; tail 3·1; wing 4·5; tarsus ·8; bill from gape 1·1. Females slightly smaller, and with a somewhat shorter bill.

Distribution. Throughout Sind, Baluchistan, and the Western Punjab as far north as Peshawar, Murree, and Sirsa, and westwards to Bampur in S.E. Persia. St. John obtained specimens, now in the British Museum, in the Khwaja Amran range north-west of Quetta.

Habits, &c. This species is chiefly found in tamarisk scrub, which abounds in Sind and the neighbouring countries. It breeds in holes in tamarisk and babul (*Acacia arabica*) trees in March and April.

964. **Dendrocopus darjilensis.** *The Darjeeling Pied Woodpecker.*

Dendrocopus majoroides, *Hodgs. in Gray's Zool. Misc.* p. 85 (1844; descr. nulla).
Picus (Dendrocopus) darjellensis, *Blyth, J. A. S. B.* xiv, p. 196 (1845).
Picus darjellensis, *Blyth, J. A. S. B.* xvi, p. 466; *id. Cat.* p. 62.
Picus majoroides, *Gray, Cat. Mamm. &c. Coll. Hodgs.* pp. 115, 155 (1846); *Horsf. & M. Cat.* ii, p. 671; *Jerdon, B. I.* i, p. 270; *id. Ibis*, 1872, p. 7; *Bulger, Ibis*, 1869, p. 156; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; *Scully, S. F.* viii, p. 244; *Hume, Cat.* no. 155.
Dendrocopus darjilensis, *Hargitt, Cat. B. M.* xviii, p. 221.

The Darjeeling Black Woodpecker, Jerdon; *Sadyer-mong-prek*, Lepcha.

Coloration. Male. Nasal plumes black; forehead, lores, narrow supercilium, and sides of face, including the ear-coverts, whity brown; sides of neck behind the ear-coverts the same, washed with orange or golden yellow; crown and upper surface generally glossy black, except the occiput and nape which are light crimson, and the innermost median and greater wing-coverts which are mostly or wholly white; wing-feathers black with white spots on both webs; tail-feathers black, the median two pairs uniform, the others more or less barred with fulvous white; chin whitish, ends of bristles black, throat light brown unstriped; breast and abdomen yellowish fulvous, with longitudinal black streaks, becoming bars on the flanks; vent and under tail-coverts light crimson.

In the *female* the occiput and nape are black instead of red. In a young male, described by Scully, all the feathers of the crown were tipped with dull crimson.

Upper mandible slaty black, lower grey horny; orbital skin plumbeous; irides reddish brown to deep crimson; feet dingy green (*Scully*).

Length 9·5; tail 3·75; wing 5; tarsus ·9; bill from gape 1·5.

Distribution. Himalayas in Nepal and Sikhim, from about 3000 to 12,000 feet elevation, and eastward to Moupin and Western Sechuan. This Woodpecker was also obtained in the North Cachar and Anghámi Nága hills by Godwin-Austen.

Habits, &c. The breeding does not appear to have been recorded. This species was observed by Scully on moss-covered oaks, usually singly or in pairs high up on the trees.

965. **Dendrocopus cathpharius.** *The Lesser Pied Woodpecker.*

Picus (Dendrocopus) cathpharius, *Hodgs., Blyth, J. A. S. B.* xii, p. 1006 (1843).
Picus cathpharius, *Blyth, Cat.* p. 63; *Horsf. & M. Cat.* ii, p. 673.

Jerdon, B. I. i, p. 271; *Blanford, J. A. S. B.* xli, pt. 2, p. 155; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 154; *Hume, Cat.* no. 156; *id. S. F.* xi, p. 57.

Dendrocopus cathpharius, *Hargitt, Cat. B. M.* xviii, p. 223; *Oates in Hume's N. & E.* 2nd ed. ii, p. 302.

The Lesser Black Woodpecker, Jerdon.

Coloration. Male. Upper parts glossy black with the following exceptions:—the forehead is brownish white, the ends of the nasal bristles being black; the occiput, nape, and sides of the neck are crimson, and some of the innermost greater and median coverts are in great part white; quills black, with white spots on both webs and generally a spot at the tip; inner webs of primaries unspotted near the tip; tail-feathers black, the two median pairs unspotted, the remainder more or less barred with buff; sides of head buffy white; chin the same with some black mixed, a black malar band from lower mandible below ear-coverts and red of the neck to side of breast; throat uniform light brown, remainder of lower parts isabelline with longitudinal black streaks, that are broadest and most marked on the breast; feathers in middle of breast and under tail-coverts sometimes tipped with red; under wing-coverts black and white, axillaries white.

The *female* has no red on the nape, but there is some on the sides of the neck, it is, however, fainter than in the male; rufous gorget generally faint or wanting.

Bill bluish white; irides brown; legs plumbeous (*Jerdon*).

Length 7; tail 2·7; wing 4; tarsus ·7; bill from gape ·75. This species is very similar to *D. darjilensis*, but much smaller.

Distribution. Eastern Himalayas; not rare in Sikhim, where the range in elevation is similar to that of *D. darjilensis*, and extending into Nepal. This Woodpecker has only once been recorded from any locality out of the Himalayas; a single specimen was obtained by Godwin-Austen in the Nága hills.

Habits, &c. The eggs, which are pure white and fairly glossy, and measure about ·77 by ·61, are laid in April, as usual in a hole excavated in a tree.

966. **Dendrocopus pyrrhothorax.** *The Red-breasted Pied Woodpecker.*

Picus cathpharius, *apud Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 154.

Picus pyrrhothorax, *Hume, S. F.* x, p. 150; xi, p. 57.

Dendrocopus pyrrhothorax, *Hargitt, Cat. B. M.* xviii, p. 224, pl. iv.

Khupi-woi-ru, Anghámi Nága.

This only differs from *D. cathpharius* in having a distinct broad crimson gorget on the breast, and the under tail-coverts much more deeply tinged with red. The other differences prove to be merely individual. It was supposed from the only pair originally described that the sexes were alike and that both had the occiput crimson, but a female in Col. Godwin-Austen's possession from the same locality as the types has the occiput black as in *D. cathpharius*.

There appears to be a passage from true *cathpharius* into the present form, some specimens of the former from Sikhim and Bhutan having a considerable amount of red on the breast.

Bill leaden dusky, paler at base of lower mandible; irides lac-red; legs and feet dull sap-green in the male, dusky lavender in the female (*Hume*).

Size rather less than that of *D. cathpharius*. Length 6·8; tail 2·6; wing 3·8; tarsus ·65; bill from gape ·8.

Distribution. Mr. Hume obtained two specimens (the types) at Aimole, in the Eastern Manipur hills. Col. Godwin-Austen also obtained a specimen at Aimole and two others in the Anghámi Nága hills. No others are known to me.

967. **Dendrocopus macii.** *The Fulvous-breasted Pied Woodpecker.*

Picus macei, *Vieill. Nouv. Dict. d'Hist. Nat.* xxvi, p. 80 (1818); *Gray, in Hardw. Ill. Ind. Zool.* i, pl. xxxii; *Blyth, J. A. S. B.* xiv, p. 196; *id. Cat.* p. 62; *Horsf. & M. Cat.* ii, p. 672; *Jerdon, B. I.* i, p. 272; *id. Ibis,* 1872, p. 7: *Blyth, Ibis,* 1866, p. 354; *Layard, Ibis,* 1868, p. 249; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; xlv, p. 70; xlvii, p. 22; *Blanf. J. A. S. B.* xli, pt. 2, p. 155; *Cock & C. H. T. Marsh. S. F.* i, p. 350; *Hume & Dav. S. F.* vi, p. 123; *Cripps, S. F.* vii, p. 261; *Hume, Cat.* no. 157; *Scully, S. F.* viii, p. 245; *Inglis, S. F.* ix, p. 247; *Hume, S. F.* xi, p. 57; *Oates, B. B.* ii, p. 33.

Picus westermani, *Blyth, Ibis,* 1870, p. 163; *Hume, S. F.* iii, p. 411; *id. Cat.* no. ? 157 quint.

Dendrotypes macei, *Blyth & Wald. Birds Burm.* p. 77.

Dendrocopus macii, *Hargitt, Cat. B. M.* xviii, p. 260; *Oates in Hume's N. & E.* 2nd ed. ii, p. 303.

The Indian Spotted Woodpecker, Jerdon.

Coloration. Male. Nasal plumes black towards the tips; narrow forehead brownish buff; crown and occiput crimson; sides of head and neck, including lores, supercilia, and ear-coverts, brownish white; a black stripe from the lower mandible to each side of the neck not joined to the black of the dorsal region; hind neck, upper back, and upper tail-coverts uniform black; remainder of upper parts barred black and white; wings and their coverts black; median and greater coverts and quills with white spots, the latter on both webs; tail black, the two outer pairs of large feathers barred with buffy white, and sometimes a few white spots on the next pair; chin, throat, and fore neck uniform light rufous brown; breast and abdomen isabelline, with black longitudinal spots on the breast, faint striæ on the abdomen, and bars on the flanks; vent and lower tail-coverts bright crimson; under wing-coverts and axillaries white, the former barred or spotted with black.

In the *female* the crown and occiput are black.

Bill dusky plumbeous, reddish beneath; irides brown; feet plumbeous (*Jerdon*).

Length 7·5; tail 3; wing 4·3; tarsus ·8; bill from gape 1·1.

Distribution. Along the base of the Himalayas from near Murree to Upper Assam, ascending the outer hills to an elevation of 5000 or 6000 feet in the Western Himalayas. This species occurs also throughout Lower Bengal; it is common around Calcutta, and was obtained by Mr. Brooks at Mudhupur in the Sonthal Pergunnahs; it also occurs in Tipperah and as far south as Akyab, where it is common, and in Cachar and Manipur. Its occurrence farther south is doubtful; it was said by Lord Walden to have been obtained by Wardlaw Ramsay in Karennee, but there are no specimens in his collections now in the British Museum; and it was formerly reported from Tenasserim, the Malay Peninsula, and Ceylon, but the reports are discredited by later writers.

Habits, &c. Breeds in March, April, and May, laying about three white eggs in a hole in a tree as usual. Eggs measure about ·9 by ·67.

968. **Dendrocopus atratus.** *The Stripe-breasted Pied Woodpecker.*

Picus atratus, *Blyth, J. A. S. B.* xviii, p. 803 (1849); xxviii, p. 412; *id. Cat.* p. 313; *Hume, S. F.* ii, p. 471; xi, p. 58; *id. Cat.* no. 157 quat.; *Walden, Ibis,* 1876, p. 343, pl. ix; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 193; *Hume & Dav. S. F.* vi, pp. 123, 500; *Oates, B. B.* ii, p. 34; *Salvad. Ann. Mus. Civ. Gen.* (2 *a*) v, p. 564; vii, p. 378.
Dendrotypes atratus, *Blyth & Wald. Birds Burm.* p. 77.
Dendrocopus atratus, *Hargitt, Cat. B. M.* xviii, p. 263.

Similar to *D. macii*, except that the sides of the head and neck are purer white, and that all the lower parts except the chin are boldly streaked longitudinally with black, the breast especially; the abdomen, too, is yellower.

Upper mandible dull black, dark brown, or horny brown; lower mandible pale plumbeous or bluish white; irides light wood to deep brown; legs and feet dark plumbeous (*Davison*).

Length 8·25; tail 3: wing 4·75; tarsus ·8; bill from gape 1·2.

Distribution. Manipur; Karennee and Tenasserim hills as far south as Muleyit, east of Moulmein, also Laos. Only found on hills, and not below about 3000 feet elevation.

969. **Dendrocopus auriceps.** *The Brown-fronted Pied Woodpecker.*

Picus auriceps, *Vigors, P. Z. S.* 1831, p. 44 (published Apr. 6, 1831).
Picus brunnifrons, *Vigors, P. Z. S.* 1831, p. 176 (Mar. 2, 1832); *Blyth, Cat.* p. 62; *Jerdon, Ibis,* 1872, p. 7.
Leiopicus brunnifrons, *Horsf. & M. Cat.* ii, p. 674.
Picus brunneifrons, *Jerdon, B. I.* i, p. 273; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 20; *Beavan, Ibis,* 1869, p. 412; *Hume. Cat.* no. 159; *C. H. T. Marshall, Ibis,* 1884, p. 410.

Dryobates brunneifrons, *Tytler, Ibis,* 1868, p. 202.
Picus incognitus, *Scully, S. F.* viii, p. 246.
Dendrocopus brunneifrons, *Hargitt, Cat. B. M.* xviii, p. 264; *Oates in Hume's N. & E.* 2nd ed. ii, p. 304; *Sharpe, Yark. Miss., Aves,* p. 110.

The Brown-fronted Woodpecker, Jerdon.

Coloration. Male. Forehead and crown umber-brown; occipital crest golden yellow in front and crimson behind; sides of the head and neck and the chin white finely mixed with black; ear-coverts very pale brown; a brown malar band on each side passing into a broad black stripe that breaks up into black spots on the sides of the neck; upper parts from the nape, wings, and tail as in *D. macii*; lower parts, from throat to abdomen inclusive, fulvescent white, longitudinally streaked with black, middle of abdomen tinged with yellow; lower abdomen and under tail-coverts pale crimson; under wing-coverts white with black spots.

The *female* has no golden yellow nor red on the occiput, which is, however, much yellower than the crown.

Base of lower mandible pale plumbeous, rest of bill bluish horny brown; irides deep brown; legs and feet pale glaucous green (*Davison*); irides crimson (*Scully*).

Length 8; tail 3·3; wing 4·6; tarsus ·8; bill from gape 1.

Distribution. Throughout the Western Himalayas as far east as Nepal, chiefly between 2000 and 6000 feet but sometimes as high as 9000. This species has been found in Northern Afghanistan, Hazara (Agror), and Kashmir, and is common about several hill-stations.

Habits, &c. D. auriceps is said to come into gardens, and to have a soft rolling whistle. It breeds in April and the first half of May, chiefly in oak and fir-trees, making holes sometimes in the stems, sometimes in branches, at varying heights from the ground, and laying 4 or 5 white eggs that measure about ·92 by ·68.

970. **Dendrocopus pectoralis.** *The Spotted-breasted Pied Woodpecker.*

Picus pectoralis, *Blyth, J. A. S. B.* xv, p. 15 (1846); xviii, p. 804; *id. Cat.* p. 63.
Picus analis, *Temm. Horsfield, Res. Java* (1824), descr. nulla: *Bonap. Consp. Av.* p. 137 (1850); *Horsf. & M. Cat.* ii, p. 672: *Jerdon, Ibis,* 1872, p. 7; *Hume & Oates, S. F.* iii, p. 57; *Armstrong, S. F.* iv, p. 309; *Hume & Dav. S. F.* vi, p. 123; *Hume, Cat.* no. 157 ter; *Oates, S. F.* x, p. 190; *id. B. B.* ii, p. 35.
Dendrotypes analis, *Cab. & H. Mus. Hein.* iv, 2, p. 47; *Walden, Ibis,* 1875, p. 463; *Blyth & Wald. Birds Burm.* p. 78.
Dendrocopus analis, *Hargitt, Cat. B. M.* xviii, p. 266.

Coloration. Male. Forehead brownish white; nasal plumes partly black; crown crimson; sides of face and neck white, the latter with a few black specks; ear-coverts brownish; a black malar band on each side from the base of the lower mandible to the side of the neck; nape and hind neck black, all the rest of the upper plumage barred black and white; quills brownish black, with large white spots on both webs; all the tail-feathers barred black and fulvescent white; chin and throat white; breast and abdomen brownish white, the former distinctly spotted, the latter indistinctly; flanks barred brown and whitish; vent and under tail-coverts spotted with brown and faintly tinged with pink.

In the *female* the crown is black.

Bill bluish black, paler at the base; iris brown; legs and feet plumbeous (*Oates*).

Length 7; tail 2·5; wing 4·1; tarsus ·7; bill from gape 1·0.

Distribution. Locally distributed in Pegu; common near Thayet Myo, rare to the southward, though this species has been procured near Rangoon. It has been found at Toungngoo and in Karennee, but nowhere in Tenasserim. Outside Indian limits it occurs in Siam, Cochin China, Malacca, Sumatra, Java, and some other islands.

Habits, &c. This Woodpecker according to Oates frequents brushwood and thin tree-jungle, but not heavy forest. The eggs have not been recorded.

971. **Dendrocopus andamanensis.** *The Andaman Pied Woodpecker.*

Picus andamanensis, *Blyth, J. A. S. B.* xxviii, p. 412, note (1859); *Beavan, Ibis,* 1867, p. 321; *Ball, J. A. S. B.* xli, pt. 2, p. 279; *id. S. F.* i, p. 62; *Walden, Ibis,* 1873, p. 300; *Hume, S. F.* ii, p. 187; *id. Cat.* no. 157 bis.

Dendrocopus andamanensis, *Hargitt, Cat. B. M.* xviii, p. 267.

Very similar to *D. pectoralis*, especially above, except that on the crown and occiput the feathers are dark grey, tipped with crimson in the male, with brown in the female, the red in the male extending farther back than in *D. pectoralis*; the present species is also distinguished by the greater prevalence of black, the white bars on the back being narrower, and the white spots on the wing-feathers smaller, whilst the tail-feathers are spotted with white on both webs, not completely banded; the malar band is broken into spots near the mandible; below, the difference from *D. pectoralis* is greater, as the breast is nearly covered with large spots, the breast-feathers being blackish brown with whitish edges; the abdomen is light fulvous brown; the flanks paler and barred with dark brown; lower abdomen and under tail-coverts crimson; under wing-coverts barred.

Bill dark slate-colour, darkest on upper mandible; iris dark brown; legs and feet dark olive-green (*W. Ramsay*).

Length 7; tail 2·7; wing 3·8; tarsus ·7; bill from gape ·9.

Distribution. The Andaman Islands.

Genus **LIOPICUS**, Bonaparte, 1854.

This genus closely resembles *Dendrocopus*, but has a more rounded wing, the primaries exceeding the secondaries by less than the length of the culmen. A small occipital crest is present. The upper plumage is black, spotted not barred with white.

Only one species is known, and this is peculiar, or nearly so, to the Indian area.

972. **Liopicus mahrattensis.** *The Yellow-fronted Pied Woodpecker.*

Picus mahrattensis, *Lath. Ind. Orn. Suppl.* p. xxxi (1801); *Gray in Hardw. Ill. Ind. Zool.* i, pl. xxxiii; *Blyth, Cat.* p. 62; *Jerdon, B. I.* i, p. 274; *King, J. A. S. B.* xxxvii, pt. 2, p. 214; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 168; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 232; *Holdsworth, P. Z. S.* 1872, p. 426; *Adam, S. F.* i, p. 373; *Ball, S. F.* ii, p. 390; *Hume & Oates, S. F.* iii, p. 58; *Blanford, S. F.* v, p. 245; *Murray, S. F.* vii, p. 111; *Butler, ib.* p. 181; *Ball, ib.* p. 205; *Hume, Cat.* no. 160; *Legge, Birds Ceyl.* p. 184; *Vidal, S. F.* ix, p. 52; *Butler, ib.* p. 385; *Reid, S. F.* x, p. 24; *Davidson, ib.* p. 297; *Davison, ib.* p. 354; *Oates, B. B.* ii, p. 37; *C. H. T. Marshall, Ibis,* 1884, p. 410; *Barnes, Birds Bom.* p. 112.

Picus aurocristatus, *Tickell, J. A. S. B.* ii, p. 579 (1833).

Leiopicus mahrattensis, *Bonap. Consp. Volucr. Zygod.* p. 8; *Horsf. & M. Cat.* ii, p. 674.

Liopipo mahrattensis, *Cab. & H. Mus. Hein.* iv (2), p. 44; *Blyth & Wald. Birds Burm.* p. 78.

Picus blanfordi, *Blyth, J. A. S. B.* xxxii, p. 75 (1863).

Liopicus mahrattensis, *Hargitt, Cat. B. M.* xviii, p. 290; *Oates in Hume's N. & E.* 2nd ed. ii, p. 305.

Coloration. Male. Nasal plumes, forehead, and sinciput pale brownish yellow, occiput scarlet, sides of face and neck white, ear-coverts with a brownish tinge; nape and hind neck smoky brown; back and scapulars brownish black and white mixed, not in bars nor distinct spots; greater and median coverts black with large white spots; smaller coverts black; rump and upper tail-coverts white, the feathers with broad dark shaft-stripes, which are generally concealed on the former but not on the latter; quills and tail-feathers spotted white on both webs, the spots on the latter white above, fulvescent below, and sometimes forming bars on the outer tail-feathers; chin, throat, and fore neck white; no malar band, but a broad brown stripe runs from beneath the ear-coverts on each side to the side of the breast and then breaks up into brown longitudinal streaks; breast, flanks, and under tail-coverts streaked with brown; middle of abdomen bright scarlet.

In the *female* the whole forehead, crown, and occiput are pale dull brownish yellow.

Bill clear plumbeous, darker on the culmen and tip of both mandibles; irides deep red; legs and feet bright plumbeous; claws horny blue (*Oates*).

Length 7 ; tail 2·6 ; wing 4 ; tarsus ·8 ; bill from gape 1 to 1·2. The bill is generally shorter in females.

Distribution. Generally spread, but only common locally, throughout the Peninsula of India and Northern Ceylon from the sea-level to about 2500 feet, or higher in places, and found at low elevations in the valleys of the Western Himalayas, but only outside the base of the Eastern. Rare in the Western Punjab, Sind, and Rajputana ; not found in Southern Ceylon, Lower or Eastern Bengal, Assam, Cachar, or Arrakan, but reappearing in the dry parts of Upper Burma, being common about Thayet Myo and farther north, and at Toungngoo. Also obtained in Cochin China.

Habits, &c. This is chiefly an inhabitant of low jungle and scrub, not of thick forest. It is often seen on Palás (*Butea frondosa*), and on species of *Acacia* and *Euphorbia*. It breeds in February, March, and April, and lays usually three white eggs measuring about ·87 by ·68. The nest is the usual hole, generally in a dead trunk or branch.

The variety called *P. blanfordi* by Blyth inhabits Upper Burma, and has the white markings of the upper plumage more developed, especially on the wings and tail. Similar birds are found in North-western India.

Genus **IYNGIPICUS**, Bonaparte, 1854.

This is but little more than a small form of *Dendrocopus*, distinguished by a rather more pointed wing and a shorter tail. The primaries greatly exceed the secondaries in length ; the first primary is quite small, and the second is only exceeded in length by the third, fourth, and fifth, which are subequal. The coloration above is black or brown, with white cross-bars ; beneath brownish white with, almost always, longitudinal brown or black streaks.

Iyngipicus ranges throughout the Oriental region, and one species is found in Africa. Five closely allied species or geographical races are found within Indian limits.

Key to the Species.

a. Upper tail-coverts and median rectrices entirely black.	
a′. Whole occiput red in males ……	*I. semicoronatus*, p. 45.
b′. A red stripe on each side of occiput in males …………………	*I. pygmæus*, p. 45.
b. Upper tail-coverts fringed and banded with white ; median tail-feathers generally spotted white.	
c′. Crown ashy grey ……………	*I. canicapillus*, p. 46.
d′. Crown light brown, lower parts striated……………………	*I. hardwickii*, p. 47.
e′. Crown blackish brown, lower parts plain……………………	*I. gymnophthalmus*, p. 48.

973. **Iyngipicus semicoronatus.** *The Darjeeling Pigmy Woodpecker.*

Picus semicoronatus, *Malherbe, Bull. Soc. d'Hist. Nat. Moselle*, v, p. 21 (1848); *id. Picidæ*, i, p. 148, pl. xxxiv, fig. 8.

Picus rubricatus, *Blyth, J. A. S. B.* xviii, p. 804 (1849); *id. Cat.* p. 63.

Picus meniscus, *Malh. Picidæ*, i, p. 151, pl. xxxv, figs. 2, 3, 4 (1861).

Yungipicus rubricatus, *Jerdon, B. I.* i, p. 276; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; *Jerdon, Ibis*, 1872, p. 8; *Hume, S. F.* iii, p. 60: *id. Cat.* no. 162; *Anderson, Yunnan Exped., Aves*, p. 585.

Iyngipicus semicoronatus, *Hargitt, Ibis*, 1882, p. 25; *id. Cat. B. M.* xviii, p. 312; *Hume, S. F.* xi, p. 59.

Coloration. Male. Forehead and crown ashy with a brownish tinge, occiput scarlet (feathers slightly elongated); nasal plumes and lores fulvescent white; broad superciliary stripe extending back to the side of the neck white, speckled with black, a black line forming a border to the crown above the supercilium, and a brown band, becoming black behind, from the eye to the side of the neck over the lower ear-coverts; nape and upper back and the upper tail-coverts velvety black; remainder of back, rump, scapulars, and wings black with white transverse bars; quills with white spots on both webs, greater and median coverts with white spots or bars, smaller coverts unspotted; the two middle pairs of tail-feathers black throughout as a rule, the two outer large pairs black barred with white above and with fulvescent below, third pair from the middle varying but generally bordered with white; malar region dusky, chin and throat whitish; under surface from throat very light fulvescent brown, with narrow blackish longitudinal streaks; under wing-coverts and axillaries mixed white and black.

The *female* has no occipital red band.

Occasionally there are white markings on the upper tail-coverts and small white spots on the median tail-feathers, but this is exceptional. The same occurs in other species of *Iyngipicus*, in which the feathers mentioned are normally black throughout.

Bill plumbeous; irides red; feet brown (*Jerdon*).

Length 5·5; tail 2; wing 3·3; tarsus ·6; bill from gape ·65.

Distribution. Sikhim, Bhutan, the Khási and Nága hills, Eastern Manipur, and Yunnan at elevations above about 3500 feet.

974. **Iyngipicus pygmæus.** *The Himalayan Pigmy Woodpecker.*

Picus pygmæus, *Vigors, P. Z. S.* 1831, p. 44; *Blyth, J. A. S. B.* xiv, p. 197 (partim); *id. Cat.* p. 63.

Picus mitchellii, *Malh. Rev. Mag. Zool.* 1849, p. 530.

Yungipicus pygmæus, *Horsf. & M. Cat.* p. 676; *Jerdon, B. I.* i, p. 277; *Hume, S. F.* iii, p. 60; *id. Cat.* no. 163; *Scully, S. F.* viii, p. 247.

Iyngipicus pygmæus, *Hargitt, Ibis*, 1882, p. 30; *id. Cat. B. M.* xviii, p. 315; *Oates in Hume's N. & E.* 2nd ed. ii, p. 306.

The only important distinction from *I. semicoronatus* is that in the male of the present species there is no red band across the occiput, but merely a few scarlet feathers forming a short, very narrow, longitudinal stripe bordering the occiput on each side. There is no constant difference in the females, but as a rule the dimensions of *I. pygmæus* are rather larger, and the white bands and spots on the upper surface are more developed.

Bill grey horny; irides dark red; feet dingy green (*Scully*).

Length 5·6; tail 2·1; wing 3·5; tarsus ·65; bill from gape ·7.

Distribution. Forests of the base and lower valleys of the Western Himalayas from around Katmandu in Nepal to Mussooree.

Habits, &c. According to Mr. R. Thompson this Pigmy Woodpecker breeds in the dense forest districts of the bhábar and lower valleys of Kumaun in April and May, laying 4 or 5 eggs. The birds migrate into cultivated districts in winter.

975. **Iyngipicus canicapillus.** *The Burmese Pigmy Woodpecker.*

Picus canicapillus, *Blyth, J. A. S. B.* xiv, p. 197 (1845); xvi, p. 467; xviii, p. 805; *id. Cat.* p. 64; *Oates, B. B.* ii, p. 36.

Yungipicus canicapillus, *Horsf. & M. Cat.* ii, p. 677; *Blyth & Wald. Birds Burm.* p. 78; *Hume & Oates, S. F.* iii, p. 59; *Armstrong, S. F.* iv, p. 309; *Hume & Inglis, S. F.* v, p. 25; *Hume & Dav. S. F.* vi, pp. 125, 500; *Hume, Cat.* no. 163 bis.

Iyngipicus pumilus, *Hargitt, Ibis,* 1881, p. 599, 1882, p. 37; *id. Cat. B. M.* xviii, p. 321; *Salvadori, Ann. Mus. Civ. Gen.* (2 *a*) v, p. 565; vii, p. 432.

Picus pumilus, *Oates, B. B.* ii, p. 37.

Iyngipicus canicapillus, *Hargitt, Ibis,* 1882, p. 39; *id. Cat. B. M.* xviii, p. 322; *Salvadori, Ann. Mus. Civ. Gen.* (2 *a*) iv, p. 578; *Hume, S. F.* xi, p. 60.

Precisely like *I. pygmæus* except that the upper tail-coverts are banded and fringed with white, and that as a rule all the tail-feathers are spotted or banded with white above and fulvous below; sometimes, however, the two median pairs are unspotted. The lower parts in general are paler in tint in *I. canicapillus*, the streak behind the eye darker brown and broader, but these distinctions cannot be depended on. Two red streaks border the occiput, one on each side, in males, as in *I. pygmæus*.

Upper mandible horny brown, lower plumbeous; irides red-brown; legs, feet, and claws plumbeous (*Davison*).

Length 5·5; tail 1·8; wing 3·25; tarsus ·6; bill from gape ·75.

Distribution. Throughout Burma, ranging north to Tipperah, Cachar, and Manipur, and probably to the ranges south of the Assam valley, and extending to the south throughout the Malay Peninsula, from the sea-level to about 5000 feet elevation.

Habits, &c. Brushwood, low or thin tree-jungle, groves in cultivation, or old clearings are the usual haunts of this bird, which is often seen on the smaller branches of trees. It is but seldom met with in thick jungle or on bamboos. The nest has not been observed.

I cannot separate from the present species *I. pumilus*, which is said to be distinguished by smaller size and by having the four middle tail-feathers without spots. Many specimens of *I. canicapillus* have unspotted or almost unspotted median rectrices, and I find that the wings of seven specimens in the British Museum, marked as adults of *I. pumilus*, from Pegu and Tenasserim, measure from 3 to 3·15 inches, which is well within the limits of variation for *I. canicapillus*, as may be seen by Hume's measurements (S. F. vi, p. 126).

976. **Iyngipicus hardwickii.** *The Indian Pigmy Woodpecker.*

Picus (Dendrocopus) hardwickii, *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 138 (1844).
Picus cinereigula, *Malh. Rev. et Mag. Zool.* 1849, p. 531.
Picus variegatus, *apud Blyth, Cat.* p. 64 (*nec Wagler*).
Yungipicus hardwickii, *Jerdon, B. I.* i, p. 278; *id. Ibis*, 1872, p. 8; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 168; *McMaster, J. A. S. B.* xl, pt. 2, p. 209; *Hume, S. F.* iii, p. 458; iv, p. 36; *Fairbank, S. F.* iv, pp. 255, 265.
Yungipicus nanus, *apud Ball, S. F.* ii, p. 390; vii, p. 205; *Hume, S. F.* iii, p. 60; *id. Cat.* no. 164; *Vidal, S. F.* ix, p. 52; *Butler, ib.* p. 385; *Davidson, S. F.* x, p. 297; *Barnes, Birds Bom.* p. 113; *Littledale, Jour. Bomb. N. H. Soc.* i, p. 197 (*nec Vigors*).
Iÿngipicus nanus, *Reid, S. F.* x, p. 24.
Iyngipicus hardwickii, *Hargitt, Ibis*, 1882, p. 45; *id. Cat. B. M.* xviii, p. 328; *Oates in Hume's N. & E.* 2nd ed. ii, p. 306.

The Southern Pigmy Woodpecker, Jerdon; *Chitta siruti pachi*, Tel.

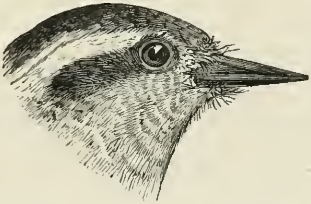

Fig. 13.—Head of *I. hardwickii.*

Coloration. Male. Forehead and crown light umber-brown, nape darker; no dark border at the side of the crown but a narrow scarlet streak on each side of the occiput; lores and some of the nasal plumes brownish white; a white stripe from above the eye to the side of the neck; a broad umber-brown band from the eye over the ear-coverts, and a second white stripe beneath the brown band; upper parts from nape dark brown with white cross-bands, rump and upper tail-coverts mostly white; quills, greater and median coverts with white spots, smaller coverts unspotted; all tail-feathers with spots on both webs white above, fulvous below; malar region and chin grey, the feathers tipped white but the ashy bases showing; remainder of lower parts brownish white with brown longitudinal streaks.

The *female* wants the occipital scarlet streaks.

Bill and legs plumbeous; orbital skin lake; irides pale yellow (*Jerdon*).

Length 5; tail 1·7; wing 3; tarsus ·55; bill from gape ·65.

Distribution. The greater part of the Indian Peninsula, from the base of the N.W. Himalayas to Mysore, and from Mount Abu to Chutia Nágpur, wanting in the open plains of Rajputana, the Deccan, &c. The Southern forms from the Western Ghats near Belgaum and from Mysore have darker heads, and thus show a passage towards *I. gymnophthalmus.*

Habits, &c. This Woodpecker is found chiefly in forest, but also in groves and gardens in well-wooded districts, and is frequently seen in parties of three or four, on the stems and branches of trees, generally climbing, but sometimes, as Jerdon observes, perching, and hopping from bough to bough. It breeds in the N.W. Provinces in March; its nest-hole has been several times recorded in a dead branch of a mango-tree, also in siris (*Acacia catechu*), and the eggs, usually 3 or 4 in number, are white and somewhat spherical, and measure about ·7 by ·52.

977. **Iyngipicus gymnophthalmus.** *The Ceylon Pigmy Woodpecker.*

Picus gymnophthalmos, *Blyth, J. A. S. B.* xviii, p. 804 (1849); *id. Cat.* p. 64; *Layard, A. M. N. H.* (2) xiii, p. 448 (1854).

Yungipicus gymnophthalmus, *Jerdon, Ibis,* 1872, p. 8; *Holdsworth, P. Z. S.* 1872, p. 427; *Legge, S. F.* i, p. 433; *id. Birds Ceyl.* p. 186; *Hume, S. F.* iii, p. 60; *id. Cat.* no. 164 bis; *Hume & Bourdillon, S. F.* iv, p. 389; *Fairbank, S. F.* v, p. 396; *Davison, S. F.* x, p. 354; *Parker, Ibis,* 1886, p. 183.

Iyngipicus gymnophthalmus, *Hargitt, Ibis,* 1882, p. 47; *id. Cat. B. M.* xviii, p. 330; *Oates in Hume's N. & E.* ii, p. 308.

Iyngipicus peninsularis, *Hargitt, Ibis,* 1882, p. 48; *id. Cat. B. M.* xviii, p. 331.

Coloration. Very similar to that of *I. hardwickii*, but much darker above and almost or quite streakless beneath in adults. Head above and stripe behind eye blackish sepia-brown. Upper parts dark brown with white cross-bars. Long supercilium extending to neck, cheeks below eye-stripe, chin, and throat white; no malar stripe; lower parts unstriped, sullied white in adults, and faintly streaked in the young; flanks generally streaked in all, and lower tail-coverts with dark shaft-stripes. There are the usual scarlet occipital stripes in males; the white spots are often small and sometimes wanting on the outer webs of the primaries.

Bill brownish olivaceous, somewhat paler beneath; iris white, greyish white, yellowish white, or reddish white; eyelid and orbital skin dull mauve or purplish; legs and feet greenish plumbeous (*Legge*).

Length 4·8; tail 1·6; wing 2·9; tarsus ·55; bill from gape ·65.

Distribution. Throughout Ceylon up to about 3000 feet above the sea, also the Malabar coast and the ranges near it as far north as the Palni hills, and perhaps farther. Malabar specimens have the heads rather paler than Ceylonese, and are the race called *I. peninsularis* by Hargitt, and the specimens thus labelled by him in the British Museum include the Malabar skins of *I. gymnophthalmus* and the Belgaum and Mysore specimens already mentioned of *I. hardwickii.* There is evidently in this, as in many similar cases, a passage between two well-marked forms.

Habits, &c. Similar to those of other *Iyngipici.* This bird is thoroughly arboreal and frequents the uppermost branches of trees, picking up small insects, and often perching. It has considerable powers of flight, and its note, according to Legge, is a prolonged trill. It breeds in February and March, and also in July, nesting in holes in small branches, and the white eggs measure about ·62 by ·53 *.

Genus **PYRRHOPICUS**, Malherbe, 1861.

Bill long and stout, culmen angulate, almost straight; nasal ridge strongly developed, nearer to the culmen than to the commissure at the base of the bill; nostrils open, not concealed by plumes; chin-angle nearly halfway from gape to tip of bill; no crest. Wings rounded, primaries scarcely exceeding secondaries in length; tail short; outer pair of tail-feathers longer than the coverts; first toe well-developed; fourth (or reversible) toe a little longer than third. Colour bay above more or less banded with black, very dark brown beneath, a partial red collar in males.

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* Iyngipicus nanus.

? Picus nanus, *Vigors, P. Z. S.* 1831, p. 172 (1832).
Iyngipicus nanus, *Hargitt, Ibis,* 1882, p. 38; *id. Cat. B. M.* xviii, p. 327; *Gould, B. Asia,* vi, pl. xxxiv.

Coloration. Crown and eye-stripe dark brown, nape very dark; supercilium extending to neck and a band below the eye-stripe white; upper parts dark brown with white cross-bands; all tail-feathers spotted, the spots on the outer webs of the primaries small; chin and throat pure white, bordered on each side by a brown malar stripe; rest of lower parts sullied white with indistinct rather broad brown streaks. Male with, as usual, a red streak on each side of the occiput.

Wing 3·05 inches; tail 1·6; tarsus ·65; bill from gape ·7.

Distribution. Three specimens collected by Captain Stackhouse Pinwill, one at Dharmsála, the other two in North-western India, are in the British Museum, and have been referred by Hargitt to Vigors's species, which was said to be from the N.W. Himalayas, and with the description of which they agree fairly. At the same time they are, as Hargitt points out, only just separable from the Malay *I. auritus,* and it is difficult to believe that all the ornithologists who have ransacked the N.W. Himalayas of late years can have overlooked this bird, which is easily distinguished from *I. pygmæus* and *I. hardwickii,* if it inhabits the area.

Only two species are known.

Key to the Species.

Larger: wing 5·75; back barred .... *P. pyrrhotis*, p. 50.
Smaller: wing 4·8; back not barred .... *P. rubiginosus*, p. 51.

The oldest name for this genus, *Venilia* (of which the type appears to have been *V. porphyromelas*, Bp. Consp. i, p. 128) cannot be used, as it had previously been employed in both Lepidoptera and Mollusca. *Lepocestes* of Cabanis (1863) has been adopted by Hargitt, but *Pyrrhopicus* and *Plinthopicus* of Malherbe date from 1861, and I accept the first. *Blythipicus* of Bonaparte (1854) is generally regarded as too absurd a term to be admitted.

978. **Pyrrhopicus pyrrhotis.** *The Red-eared Bay Woodpecker.*

Picus pyrrhotis, *Hodgs. J. A. S. B.* vi, p. 108 (1837).
Gecinus pyrrhotis, *Blyth, Cat.* p. 59.
Blythipicus pyrrhotis, *Bonap. Consp. Volucr. Zygod.* p. 9; *Hume, S. F.* vii, p. 520; xi, p. 63; *id. Cat.* no. 176.
Venilia pyrrhotis, *Horsf. & M. Cat.* ii, p. 666; *Jerdon, B. I.* i, p. 291; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 155; xlv, pt. 2, p. 70; *Walden in Blyth's Birds Burm.* p. 77; *Inglis, S. F.* v, p. 26; *Hume & Dav. S. F.* vi, p. 142; *Oates, B. B.* ii, p. 39.
Lepocestes pyrrhotis, *Hargitt, Cat. B. M.* xviii, p. 380.

Fi-ing, Lepcha.

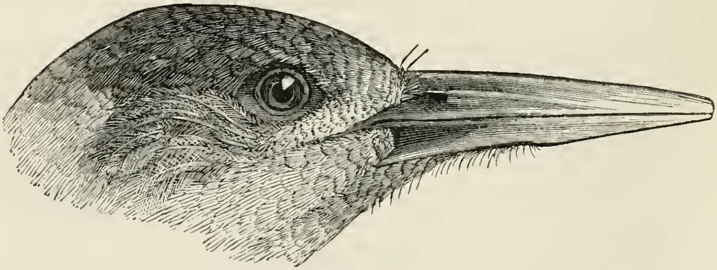

Fig. 14.—Head of *P. pyrrhotis.*

Coloration. Male. Whole head brown, the forehead, sides of head, and chin paler; feathers of forehead and crown pale-shafted; a bright crimson half-collar behind the ear-coverts extending more or less completely round the nape; all upper parts from the nape, with wing-feathers and coverts, barred rufous and black, the rufous bars broadest on the quills, back-feathers fringed with deeper red;

tail-feathers rufous with black spots, forming imperfect bars, on both webs, shafts of quills and tail-feathers light red; lower parts from throat olive-brown, reddish on the breast, dusky on the abdomen; a few narrow rufous bands on the lower flanks and under tail-coverts.

The *female* wants the crimson half-collar. The young have pale shaft-lines throughout the head and neck, and traces of bars on the breast and abdomen.

Bill pale greenish yellow; irides reddish orange to brownish red; legs and feet very dark green (*Davison*).

Length 11·5; tail 4; wing 5·75; tarsus 1·1; bill from gape 1·9.

Distribution. From the Eastern Himalayas (Nepal, Sikhim, Dafla hills) to the Malay Peninsula, throughout Burma and other intervening countries.

Habits, &c. An inhabitant of dense underwood, keeping very much to the ground, and rarely ascending a tree unless disturbed. This bird is generally found in pairs or small parties, is very vociferous and has a loud screeching call. The eggs do not appear to have been observed.

979. **Pyrrhopicus rubiginosus.** *The Malay Bay Woodpecker.*

Hemicircus rubiginosus, *Swainson, Birds W. Afr.* ii, p. 150 (1837).
Picus melanogaster, *Hay, Madr. Jour. L. S.* xiii, pt. 2, p. 153 (1844).
Gecinus rubiginosus, *Blyth, Cat.* p. 59.
Venilia porphyromelas (*Boie*), *Bonap. Consp.* i, p. 128; *Hume & Dav. S. F.* vi, p. 143; *Oates, B. B.* ii, p. 40.
Venilia melanogaster, *Horsf. & M. Cat.* p. 665.
Lepocestes porphyromelas, *Salvad. Ucc. Born.* p. 48; *Hume, S. F.* iii, p. 319; *Hargitt, Cat. B. M.* xviii, p. 382.
Blythipicus porphyromelas, *Hume, S. F.* vii, p. 520; *id. Cat.* no. 176 bis.

Coloration. Male. Whole head brown, paler in front all round the base of the bill; feathers on each side of the neck behind the ear-coverts tipped with bright crimson, forming blood-red patches; some of the malar feathers tinged red in some specimens; whole upper plumage from nape, including the edges of the quills, dull crimson; feathers of rump and upper tail-coverts, quills and tail-feathers very dark brown with narrow bars of pale rufescent brown, well marked on outer webs of all wing-feathers, but except on the tertiaries faint on the inner webs; lower plumage from throat very dark olive-brown, the breast with a reddish tinge.

The *female* wants the red patches behind the ears.

Bill chrome-yellow, tinged with green towards the base; irides red; legs and feet dark, varying in shade, generally purplish or purplish brown (*Davison*).

Length 9; tail 3; wing 4·8; tarsus ·9; bill from gape 1·45.

Distribution. Malay Peninsula, extending into Tenasserim as far north as Bopyin, south of Mergui, and also into Sumatra and Borneo. Common in the extreme south of Tenasserim.

Habits, &c. Like *P. pyrrhotis*, this species is said by Davison to be very shy and to keep much to the underwood of the evergreen forests; it avoids the larger trees, is generally found in pairs and utters incessantly a sharp metallic note.

Genus **MIGLYPTES**, Swainson, 1837.

Bill of moderate length, culmen much curved; no nasal ridge; nostrils round, exposed; chin-angle halfway between gape and tip; fourth or outer hind toe longer than third or outer front toe; first toe (hallux) short. A nuchal crest. Wing rounded: all tail-feathers pointed, the outer pair just extending beyond the lower coverts. Plumage brown or black and buff, more or less in alternating bars.

This genus is restricted to Burma and the Malay countries, three species being found in British Burma. The coloration is peculiar and the habits are imperfectly known, the nest not having hitherto been found.

Key to the Species.

a. Back with buff cross-bands; tail-feathers spotted.
  a'. Head barred above; rump uniform buff. *M. grammithorax*, p. 52.
  b'. Head not barred above; rump barred like back .... *M. tukki*, p. 53.
b. Back without cross-bands, tail unspotted. *M. jugularis*, p. 54.

980. **Miglyptes grammithorax.** *The Fulvous-rumped Barred Woodpecker.*

Meiglyptes tristis, *apud Blyth, Cat.* p. 60; *Stoliczka, J. A. S. B.* xxxix, pt. 2, p. 294; *Blyth, Birds Burm.* p. 77; *Hume & Dav. S. F.* vi, pp. 131, 501; *Hume, Cat.* no. 165 ter (*nec* Picus tristis, *Horsf.*).

Phaiopicus grammithorax, *Malh. Picidæ*, ii, p. 12, pl. xlviii, figs. 4–6 (1862).

Miglyptes grammithorax, *Nicholson, Ibis*, 1879, p. 165; *Hume, S. F.* viii, p. 497; *Oates, B. B.* ii, p. 59; *Hargitt, Ibis*, 1884, p. 191; *id. Cat. B. M.* xviii, p. 385.

Coloration. Male. Lores, anterior half of orbital region, point of chin, lower back, and rump uniform buff; a malar stripe pale crimson; remainder of the bird blackish brown barred with buff, very closely on the head and neck all round and on the breast, the barring becoming wider behind and still wider on the abdomen, but the bars are broader still on the back, scapulars, wing-coverts, tertiaries, and upper tail-coverts; wing and tail-feathers with buff spots on both webs; under wing-coverts and axillaries buff with a few dark brown spots.

Female. No malar stripe.

Bill black; irides deep brown or dull red; edge of eyelids black; legs and feet dirty green (*Davison*).

Length 7; tail 2; wing 3·9; tarsus ·8; bill from gape ·9.

Distribution. The Malay Peninsula, Sumatra, and Borneo, extending north into Tenasserim as far as the base of Nwalabo mountain, near Tavoy.

Habits, &c. As described by Davison, this species is usually found in dense tree-jungle, and generally in pairs; it is never seen on the ground, but always on trunks and branches of trees. The note of all three species of *Miglyptes* is similar, a rolling *kirr-r-r*.

The true *M. tristis* is confined to Java and has the middle of the breast and abdomen black without bars. Specimens of *M. grammithorax* from Nwalabo, Tenasserim, have the breast and abdomen brown, almost without bars, but not black.

981. **Miglyptes tukki.** *The Buff-necked Barred Woodpecker.*

Picus tukki, *Lesson, Rev. Zool.* 1839, p. 167.
Hemicercus brunneus, *Eyton, P. Z. S.* 1839, p. 106.
Meiglyptes pectoralis, *apud Blyth, Cat.* p. 60 (*nec* Picus pectoralis, *Latham*).
Meiglyptes brunneus, *Horsf. & M. Cat.* ii, p. 668.
Meiglyptes marginatus, *Reinw., Stoliczka, J. A. S. B.* xxxix, pt. 2, p. 294.
Miglyptes tukki, *Hume, S. F.* iii, p. 319; *id. Cat.* no. 165 quint.; *Hume & Dav. S. F.* vi, p. 132; *Oates, B. B.* ii, p. 61; *Hargitt, Ibis,* 1884, p. 193; *id. Cat. B. M.* xviii, p. 388.

Coloration. Male. Dull dark olive or brownish olive, head uniform and unbarred above and on the sides; a crimson malar band; a large buff patch on each side of the neck; back, scapulars, rump, tail, and wing-coverts with narrow buff cross-bars throughout; quills with small marginal buff spots on the outer, and larger spots on the inner webs; tail-feathers with narrow bars interrupted near the shaft; chin and throat very finely barred with buff; fore neck uniform blackish brown; breast and abdomen dark brown with narrow buff bands; middle of breast almost uniform; lower wing-coverts and top of wing buff.

Female. No crimson malar band.

Upper mandible black, lower mandible plumbeous blue, in some greenish; irides brown; legs and feet dull or brownish green.

Length about 8·6; tail 2·7; wing 4·1; tarsus ·9; bill from gape 1·1.

Distribution. The Malay Peninsula, Sumatra, and Borneo, ranging into the extreme south of Tenasserim.

Habits, &c. Very similar to those of the last species, this Woodpecker being found in dense forest.

982. **Miglyptes jugularis.** *The Black-and-Buff Woodpecker.*

Picus (Meiglyptes) jugularis, *Blyth, J. A. S. B.* xiv, p. 195 (1845).
Meiglyptes jugularis, *Blyth, Cat.* p. 60 : *Horsf. & M. Cat.* ii, p. 669 ; *Hume & Oates, S. F.* iii, p. 63 ; *Blyth & Wald. Birds Burm.* p. 77 ; *Hume & Dav. S. F.* vi, pp. 132, 501 ; *Oates, B. B.* ii, p. 60.
Miglyptes jugularis, *Hume, Cat.* no. 165 quat. ; *Bingham, S. F.* ix, p. 161 ; *Hargitt, Ibis*, 1884, p. 197 ; *id. Cat. B. M.* xviii, p. 391.

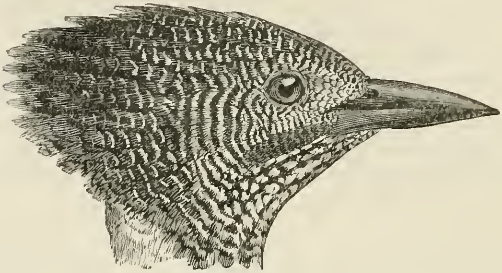

Fig. 15.—Head of *M. jugularis.*

Coloration. Male. Black or brownish black, except two large patches, one on each side of the neck, extending round the hind neck, and forming a demi-collar, the rump, but not the tail-coverts, a large space on each wing consisting of all the minor coverts and of the innermost major and median coverts and tertiaries, the edge of the wing and wing-lining, which are pure buff; a malar stripe on each side with the feathers tipped red; forehead, crown, and sides of head narrowly barred across with buff; chin black and buff mixed in small subequal spots; quills with small submarginal spots on the outer webs and large spots on the inner, the latter wanting near the tip and increasing in size near the base; a few buff bars on the flanks and thigh-coverts; tail uniform.

The *female* wants the red malar stripe.

Bill black; iris dark brown; eyelids dark plumbeous; legs dull bluish, claws horny brown (*Oates*).

Length 7·5; tail 2; wing 4; tarsus ·85; bill from gape 1.

Distribution. The greater part of Burma (rare in the Arrakan and Pegu hills, and near Toungngoo, more common in Tenasserim), as far south as Tavoy; also Siam and Cochin China.

Habits, &c. This Woodpecker is found in high forests, but has also been observed by Davison in large clearings, open jungle, and even in bamboo-jungle. It closely resembles *Hemicercus canente* in coloration.

Genus **MICROPTERNUS**, Blyth, 1845.

Bill like that of *Miglyptes*, curved above, without nasal ridge, but the chin-angle is nearer to the tip than to the gape; nostrils rounded and exposed; wing rounded; tail-feathers pointed, the outer pair just exceeding the tail-coverts in length; first toe very short, its claw very small, third and fourth toes subequal. Plumage throughout pale chestnut with black bars, which vary greatly in development in different species.

The genus *Micropternus* extends throughout the Oriental region; three species, which are merely geographical races, separated by very slight characters, and tending greatly to pass into each other, being found within our area. They are birds of very singular habits, having a peculiar, strong, unpleasant smell, and living chiefly or entirely on tree-ants. Their plumage is almost always smeared with a gummy substance derived from ants' nests, and the heads of ants are often found attached to their tail-feathers. Moreover, they lay their eggs in holes made in the large ants' nests that are so common in India attached to branches of trees or bamboos.

Key to the Species.

a. Central part of pale-edged chin and throat-feathers of same colour as breast .... *M. phæoceps*, p. 55.
b. Central part of chin and throat-feathers darker than breast.
  a′. Pale-bordered throat-feathers extend to malar region .... *M. brachyurus*, p. 57.
  b′. Pale-edged throat-feathers do not extend to malar region .... *M. gularis*, p. 57.

983. **Micropternus phæoceps.** *The Northern Rufous Woodpecker.*

Picus rufus, *Gray in Hardw. Ill. Ind. Orn.* i, pl. xxix, fig. 2 (1830-32), *nec Gmel.*
Micropternus phaioceps, *Blyth, J. A. S. B.* xiv, p. 195 (1845); *id. Cat.* p. 60; *Tytler, A. M. N. H.* (2) xiii, p. 367 (1854); *Horsf. & M. Cat.* ii, p. 667; *Jerdon, B. I.* i, p. 294; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 267; xliii, pt. 2, p. 176; *Ball, S. F.* ii, p. 392; vii, p. 206; *Hume & Oates, S. F.* iii, p. 72; *Blyth & Wald. Birds Burm.* p. 77; *Gammie, S. F.* iv, p. 511; *Hume, S. F.* v, p. 480; *Hume & Dav. S. F.* vi, pp. 145, 501; *Cripps, S. F.* vii, p. 262; *Scully, S. F.* viii, p. 249.
Phaiopicos blythii, *Malherbe, Rev. Mag. Zool.* 1849, p. 534.
Meiglyptes rufinotus, *Malh. Bonap. Consp.* i, p. 113 (1850).
Micropternus barmanicus, *Hume, P. A. S. B.* 1872, p. 71.
Micropternus rufinotus, *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 70.
Micropternus phæoceps, *Hume, Cat.* no. 178; *id. S. F.* ix, p. 112; xi, p. 64; *Bingham, S. F.* ix, p. 164; *id. Ibis*, 1885, p. 332; *Oates, B. B.* ii, p. 57; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 580; v, p. 568; vii, p. 380; *Hargitt, Ibis*, 1885, p. 3; *id. Cat. B. M.* xviii, p. 393; *Oates in Hume's N. & E.* 2nd ed. ii, p. 308.

The Bengal Rufous Woodpecker, Jerdon; *Fi-ing*, Lepcha.

Coloration. Male. The whole plumage dull rufous (light chestnut); top of the head and occiput tinged with dusky brown, the feathers slightly paler at the edges, feathers of the chin and throat with much more distinct pale edges; feathers beneath the eye and for a short distance forwards and backwards tipped with crimson; upper parts from the neck and the wing and tail-feathers with black transverse bars, which sometimes disappear completely on the back, and are very narrow on the tail-feathers; lower surface rather duller in colour than the back, and without black bars except occasionally on the flanks, thigh- and under tail-coverts.

In *females* there is no red below the eye. The young generally have crescentic black or dusky marks on the underparts.

Bill very dark brown, plumbeous at the base of the lower mandible; irides brown, eyelids plumbeous; legs and feet greyish brown (*Oates*).

Length 10; tail 3; wing 5; tarsus ·95; bill from gape 1·25.

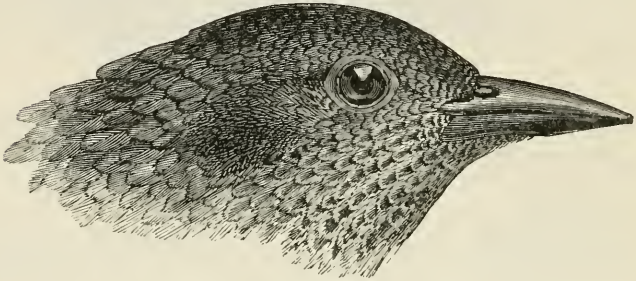

Fig. 16.—Head of *M. phæoceps*.

Distribution. The forests at and near the base of the Himalayas as far west as Dehra Dún; the greater part of Bengal and parts of the forest-region between the Ganges and Godávari, east of the meridian of 80° or 82° *; Assam, Cachar, Manipur, and Burma as far south as Moulmein; also Siam, Cambodia, and Cochin China.

Habits, &c. A quiet bird, generally silent but far from shy, and where common, as in parts of Burma, found in both evergreen and deciduous forest, in bamboo-jungle, and occasionally in cultivation. It feeds chiefly on the ants † that form nests in trees, and has been several times found by Mr. Gammie in Sikhim, and by Major Bingham in Tenasserim, to make a hole in the middle of one of these ants' nests, and to lay its eggs in a cup-shaped cavity in the middle. The eggs, generally three in number, are laid in April and May: they are thin, fragile, without gloss, and measure about 1·16 by ·7. The ants' nests are well known; they are a foot or more in diameter, and are composed of the leaves and twigs of the tree cemented together by a felt-like substance.

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* Barnes in the 'Birds of Bombay' includes *M. phæoceps*, because according to Jerdon it is found in some of the forests of Central India. The mistake has been repeatedly made of supposing that Jerdon, by the words 'Central India,' meant the region so-called at the present day, whereas in the Introduction to the 'Birds of India,' p. xl, he defined the area, which as understood by him comprised Chutia Nagpur and the forest-tracts extending southward to Bastar. *M. phæoceps* is not known to occur anywhere within 300 miles of the Bombay Presidency.

† Species of *Cremastogaster*, Jour. Bombay N. H. Soc. vii, p. 198.

984. **Micropternus brachyurus.** *The Malay Rufous Woodpecker.*

Picus brachyurus, *Vieill. Nouv. Dict. d'Hist. Nat.* xxvi, p. 103 (1818).
Picus badius, *Raffles, Trans. Linn. Soc.* xiii, p. 289 (1822).
Micropternus badius, *Blyth, J. A. S. B.* xiv, p. 194 ; *id. Cat.* p. 61 : *Horsf. & M. Cat.* ii, p. 666 ; *Hume, S. F.* iii, p. 319.
Micropternus brachyurus, *Hume, S. F.* v, p. 481 ; *id. Cat.* no. 178 bis ; *Hume & Dav. S. F.* vi, p. 145 ; *Oates, B. B.* ii, p. 58 ; *Hargitt, Ibis,* 1885, p. 10 ; *id. Cat. B. M.* xviii, p. 396.

This is very similar to *M. phæoceps*, but distinguished by being smaller, by the crown not being as a rule darker than the back, by the central portions of the pale-edged feathers of the chin, throat, and malar region being much darker than the breast, and by the black bars on the upper surface, and especially on the lower plumage, being more developed, and those on the tail-feathers broader. Most Tenasserim birds, except from south of Tavoy, are intermediate between *M. brachyurus* and *M. phæoceps.*

Length about 8 ; tail 2·3 ; wing 4·5 ; tarsus ·85 ; bill from gape 1.

Distribution. The Malay Peninsula, Sumatra, and Java, extending north into Tenasserim, where this Woodpecker appears to pass into *M. phæoceps.*

985. **Micropternus gularis.** *The Malabar Rufous Woodpecker.*

Picus (Micropternus) gularis, *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 139 (1844).
Micropternus gularis, *Blyth, J. A. S. B.* xv, p. 17 ; *id. Cat.* p. 61 ; *Jerdon, B. I.* i, p. 294 ; *Blyth, Ibis,* 1867, p. 297 ; *Holdsworth, P. Z. S.* 1872, p. 428 ; *Hume, S. F.* i, p. 434 ; v, p. 481 ; *id. Cat.* no. 179 ; *Blanf. Ibis,* 1874, p. 92 ; *Fairbank, S. F.* iv, pp. 255, 265 ; *Laird, S. F.* vii, p. 470 ; *Legge, Birds Ceyl.* p. 200 ; *Vidal, S. F.* ix, p. 53 ; *Davison, S. F.* x, p. 356 ; *id. Ibis,* 1885, p. 331 ; *Hargitt, Ibis,* 1885, p. 7 ; *id. Cat. B. M.* xviii, p. 399 ; *Barnes, Birds Bom.* p. 118 ; *Davidson, Jour. Bomb. N. H. Soc.* vi, p. 335.
Phaiopicos jerdonii, *Malh. Rev. Mag. Zool.* 1849, p. 535 ; *id. Picidæ,* ii, p. 3, pl. xlvii.

Coloration and sexual distinctions similar to those of the two preceding species, except that the feathers of the chin and throat which, as in *M. brachyurus*, are darker, except on their whitish edges, than the breast-feathers, are confined to a tract in the middle of the throat and do not extend to the malar region. The head is usually dusky above, as in *M. phæoceps.* Upper parts generally barred with black, lower parts seldom barred in adults, the flanks alone showing some traces of barring.

Length 9 ; tail 2·75 ; wing 4·75 ; tarsus ·9 ; bill from gape 1·2.

Distribution. Ceylon, and the forest tracts near the Malabar coast, both below and above the Gháts, as far north as the neighbourhood of Bombay.

Habits, &c. Similar to those of *M. phæoceps* ; this species has been observed by several writers to feed on ants, and both Davison and Aitken found the eggs laid in ants' nests. According to Legge, it often feeds on the ground, and he has seen it breaking up the dried dung of cattle. He also says it has a loud note, often heard very early in the morning.

Genus **BRACHYPTERNUS**, Strickland, 1841.

Bill scarcely longer than head, the culmen curved; nasal ridge close to the culmen, but subobsolete; nostrils exposed. First (hind) digit and claw very small, together scarcely as long as one of the claws of the other digits; third and fourth toes subequal. Wings and tail longer than in *Micropternus*; outer tail-feathers a little longer than the coverts. A red occipital crest in both sexes; crown red in males, black with white spots in females; back yellow or red, lower parts black and white or fulvous.

This genus is peculiar to India and Ceylon.

Key to the Species.

Back yellow or orange	*B. aurantius*, p. 58.
Back crimson	*B. erythronotus*, p. 60.

986. **Brachypternus aurantius.** *The Golden-backed Woodpecker.*

Picus aurantius *and* P. bengalensis, *Linn. Syst. Nat.* i, pp. 174, 175 (1766).

Malacolophus melanochrysos, *Hodgs. J. A. S. B.* vi, p. 109 (1837).

Brachypternus aurantius, *Strickl. P. Z. S.* 1841, p. 31; *Blyth, Cat.* p. 56; *Horsf. & M. Cat.* ii, p. 654; *Adams, P. Z. S.* 1858, p. 475; 1859, p. 174; *Jerdon, B. I.* i, p. 295; *Ball, S. F.* vii, p. 206; *Cripps, ib.* p. 263; *Hume, Cat.* no. 180; *Reid, S. F.* x, p. 25; *Oates in Hume's N. & E.* 2nd ed. ii. p. 309.

Brachypternus micropus, *Blyth, J. A. S. B.* xiv, p. 194 (1845).

Brachypternopicus chrysonotus (*Less.*), *apud Malh. Rev. Zool.* 1845, p. 404.

Brachypternopicus puncticollis, *Malh. t. c.* p. 405.

Brachypternus dilutus, *Blyth, Cat.* p. 56 (1849); *id. Ibis,* 1866, p. 356; *Jerdon, B. I.* i, p. 297; *Hume, S. F.* i, p. 171; *id. Cat.* no. 182; *Doig, S. F.* viii, p. 370.

Brachypternus chrysonotus, *apud Horsf. & M. Cat.* ii, p. 656; *Jerdon, B. I.* i, p. 296; *McMaster, J. A. S. B.* xl, pt. 2, p. 209; *Fairbank, S. F.* iv, p. 255.

Brachypternus puncticollis, *Holdsworth, P. Z. S.* 1872, p. 428; *Hume, Cat.* no. 181; *Legge, Birds Ceyl.* p. 205, pl. ix; *Vidal, S. F.* ix, p. 53; *Butler, ib.* p. 386; *Davidson, Jour. Bomb. N. H. Soc.* vi. p. 336.

Brachypternus intermedius, *Legge, S. F.* iv, p. 242; *White, S. F.* v, p. 201; *Parker, S. F.* ix, p. 479.

Brachypternus aurantius *and* B. puncticollis, *Davison, S. F.* x, p. 356; *Barnes, Birds Bom.* pp. 118, 119; *Hargitt, Cat. B. M.* xviii, pp. 404, 407.

Coloration. Male. Forehead and crown black, the feathers tipped with crimson; occipital crest bright crimson, the feathers with whitish shaft-stripes; a narrow stripe on each side of the crown, and a broad band through the eye to the nape, including upper lores and ear-coverts, mixed black and white; remainder of sides of head, above and below the eye, and sides of neck white, often tinged yellowish; hind neck, upper back, rump, and upper tail-coverts velvety black; scapulars and interscapulary region golden yellow, sometimes tinged with orange-red; most of the greater wing-coverts and some of the inner median coverts with the outer webs of the secondary quills golden olive, the other coverts black, nearly all coverts except along the forearm with a subterminal yellowish or olivaceous white spot, varying much in size; both webs of primaries and inner webs of secondaries brownish black, with large white spots; tail-feathers entirely black; malar region, chin, throat, and fore neck black, with numerous short white stripes or spots, this pattern passing gradually into that of the breast, where the feathers are buffy white with broad black borders, that become narrower on the abdomen; flanks and under tail-coverts white with broad black bars, or black with large white spots (fig. 8, p. 14).

Female. Forehead and crown black, each feather with a terminal spot; a crimson occipital crest as in the male. Nestling birds are sooty black and sullied white below, and the females want the white spots on the head.

Bill slaty black; irides red-brown; orbital skin dusky green; feet dark green; claws dusky (*Jerdon*).

Length 11·5; tail 3·75; wing 5·5; tarsus ·95; bill from gape 1·5.

Distribution. Throughout India and Ceylon, ranging throughout Sind and the Punjab, ascending the lower Western Himalayas to about 3000 feet, and extending on the eastward to Eastern Bengal and Cachar, but not to Assam.

The pale form from Sind, distinguished by Blyth as *B. dilutus*, is a well-marked geographical race, paler yellow on the back, all the interscapulary feathers with white shaft-stripes and dusky tips, with white spots along the shafts of the scapulars, and large white spots on the wing-coverts.

The dark Ceylon and Malabar and S. Indian form called *B. micropus* by Blyth and *B. puncticollis* by Malherbe, and wrongly identified with *Picus chrysonotus* of Lesson by several naturalists, has much smaller and more rounded white spots on the throat and fore neck, together with frequently a white bar near the base of each feather in those parts. Occasionally the fore neck (not the throat) is unspotted black. The black and white band through the eye is connected by a black stripe with the nape. The black edges of the breast-feathers are wider. But both in this case and in that of *B. dilutus* not only are intermediate forms between them and *B. aurantius* common, but there are in the Hume Collection characteristic skins of *B. dilutus* from Bengal and of *B. puncticollis* from Lucknow.

B. intermedius has a red back, and is probably a hybrid between the present Woodpecker and *B. erythronotus*; and *B. puncticollis* itself, especially the very dark Ceylon birds, may result from an occasional cross with the red-backed species.

Habits, &c. By far the commonest and most familiar of Indian Woodpeckers, this is often seen about villages where there are trees, and especially in mango-groves. It is also found in thin forest, and in Sind in tamarisk-scrub, and feeds much on ants; it is a bold noisy bird with a loud screaming call, often uttered on the wing. It breeds in Northern India in March and April, and again in June and July, in Ceylon from February till June; the eggs, three in number as a rule, being often laid in Northern India in a hole in a mango-tree. The eggs are white and glossy, and measure about 1·11 by ·8.

987. **Brachypternus erythronotus.** *The Red-backed Woodpecker.*

Picus erithronothos, *Vieillot, Nouv. Dict. d'Hist. Nat.* xxvi, p. 73 (1818).

Picus ceylonus, *Cuv. Règne Anim.* éd. 2^{e}, i, p. 451 (1829).

Brachypternus erythronotus, *Strickland, P. Z. S.* 1841, p. 31; *Hargitt, Cat. B. M.* xviii, p. 409; *Oates, in Hume's N. & E.* 2nd ed. ii, p. 311.

Brachypternus ceylonus, *Blyth, Cat.* p. 56; *Layard, A. M. N. H.* (2) xiii, p. 449 (1854); *Horsf. & M. Cat.* ii, p. 656; *Blyth, Ibis,* 1867, p. 297; *Holdsworth, P. Z. S.* 1872, p. 428; *Hume, Cat.* no. 182 bis; *Legge, Birds Ceyl.* p. 202, pl. viii.

Coloration. Male. Forehead and crown black, the feathers tipped crimson; occipital crest crimson, feathers more or less white-shafted; sides of head black, with two buffy-white stripes, one from above the eye over the ear-coverts, the other from the base of the upper mandible below the eye and ear-coverts down the side of the neck; supraorbital, upper loral, and malar regions spotted white, ear-coverts streaked with white; back of neck and uppermost part of back, rump, and upper tail-coverts black, the rump-feathers edged with crimson; back and scapulars bright crimson like the crest; coverts and outer webs of secondaries duller crimson; generally several of the outer greater coverts and a few median coverts each with a subterminal pinkish-white spot; both webs of primary quills and inner webs of secondaries black with white spots, except near the tips; tail black; chin and middle of throat like malar region black with apical white spots, and generally with the base of the feathers white, sides of throat entirely black; rest of lower parts white, often sullied, the feathers with black edges, which are so broad on the breast as to predominate, the white being frequently reduced to large spots; flanks, thighs, and lower tail-coverts more or less barred with black.

Female. Forehead and crown black, with small white apical spots; occipital crest alone crimson.

Bill blackish, base and sides of under mandible leaden; iris red; legs and feet murky greenish, olivaceous green, or dusky sap-green (*Legge*).

Length about 11·5 inches; tail 3·75; wing 5·4; tarsus ·95; bill from gape 1·5.

Distribution. Peculiar to Ceylon, found almost throughout the island up to 3500 or 4000 feet elevation.

Habits, &c. Very similar to those of *B. aurantius.* According to

Legge this Woodpecker is partial to cocoanut and other trees in cultivation, but is also common in forest. It is pugnacious, fearless, and active, and has a loud harsh call; it lives largely on red ants. It breeds in Southern Ceylon from February till June, and not unfrequently lays its eggs, which appear not to have been described, in a hole cut into the stem of a dead cocoanut-tree.

Genus **TIGA**, Kaup, 1836.

This genus is very close to *Brachypternus*, and differs chiefly in having no hallux (first digit or inner hind toe); the coronal feathers are more elongate and the wing more pointed. It represents *Brachypternus* east of the Bay of Bengal, but is also found in the Indian Peninsula.

Key to the Species.

A single black line down middle of throat	*T. javanensis*, p. 61.
Two black lines with a brownish space between them down middle of throat	*T. shorei*, p. 62.

988. **Tiga javanensis.** *The Common Golden-backed Three-toed Woodpecker.*

Picus javanensis, *Ljung, Kon. Svensk. Vet.-Ak. Handl.* 1797, p. 134; *Walden, Ibis*, 1871, p. 164.
Picus tiga, *Horsf. Trans. Linn. Soc.* xiii, p. 177 (1821).
Chrysonotus tridactylus, *Swains. Classif. B.* ii, p. 309 (1837).
Picus (Tiga) intermedius, partim, *and* P. (T.) tridactylus (*Swains.*), *Blyth, J. A. S. B.* xiv, p. 193 (1845).
Picus (Brachypternopicus) rubropygialis, *Malh. Rev. Zool.* 1845, p. 400.
Tiga intermedia *and* T. tridactyla, *Blyth, Cat.* p. 56.
Chrysonota tiga *and* C. intermedius, *Horsf. & M. Cat.* ii, p. 657.
Chrysonotus intermedius *and* C. rubropygialis, *Jerdon, B. I.* i, p. 299.
Tiga intermedia, *Hume, S. F.* iii, pp. 74, 328; *Armstrong, S. F.* iv, p. 311; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 580; v, p. 567; vii, p. 432.
Chrysonotus rubropygialis, *Hume, S. F.* iv. p. 390.
Tiga javanensis, *Blyth & Wald. Birds Burm.* p. 75; *Hume & Dav. S. F.* vi, pp. 146, 501; *Hume, Cat.* no. 184; *Oates, S. F.* viii, p. 165; *Bingham, S. F.* ix, p. 164: *Davison, S. F.* x, p. 357; *Oates, B. B.* ii, p. 55; *Hargitt, Cat. B. M.* xviii, p. 412; *Oates in Hume's N. & E.* 2nd ed. ii, p. 311.

The Common Three-toed Woodpecker; *The Southern Three-toed Woodpecker*, Jerdon.

Coloration. Male. Crown and long occipital crest crimson, the feathers dark ashy at the base, then black, then red; forehead often brownish; sides of head and neck white, except a broad black band from the eye to the nape, and another black band, often much mixed with white, from the malar region to the shoulder; hind neck and uppermost back black; back, scapulars, and wing-coverts golden olive, with orange or scarlet edges; rump and lower back crimson; upper tail-coverts black, often brownish; outer webs of secondary quills golden olive, rest of quills brownish black, with white spots on the inner webs only, tips of primaries sometimes very pale or whitish; tail black; lower parts white or buffy white; a broken black stripe down the middle of the chin and throat, getting broader below; feathers of breast and abdomen with broad black edges, so broad on the breast as to produce a scale-like pattern; flanks and lower tail-coverts barred black.

Female. Whole crown and occipital crest black, with elongate subterminal spots on each feather.

Bill very dark brown; iris hazel; eyelids plumbeous; legs greenish; claws horn-colour (*Oates*).

Length 11·5; tail 4; wing 5·8; tarsus ·95; bill from gape 1·5.

Distribution. Common throughout Burma, extending to Siam, Cambodia, Cochin China, the Malay Peninsula, Borneo, Sumatra, and Java. Found also in the hill-forests near the Malabar coast of India as far north as the Wynaad. The statement that the type of *T. rubropygialis* came from Bengal needs confirmation (according to Jerdon it came from Bangalore). Apparently this species is found nowhere in the Peninsula of India except the southern part of the Malabar coast, and it is also wanting in the Assam hills, Cachar, and Manipur.

The Malabar form called *Chrysonotus rubropygialis* by Jerdon is rather smaller than the Burmese, and has rather more white on the breast, but there is no constant distinction.

Habits, &c. Very similar to those of *Brachypternus*. The present species has much the same shrill call and is equally familiar. The eggs have been taken in March in the Malabar forests by F. Bourdillon, and in Burma from March to May by Oates and Bingham. They are laid, like those of other Woodpeckers, in holes in trees, are white, glossy, and usually three in number, and measure about 1·11 by ·8.

989. **Tiga shorei.** *The Himalayan Golden-backed Three-toed Woodpecker.*

Picus shorei, *Vigors, P. Z. S.* 1831, p. 175.
Picus (Tiga) shorei, *Blyth, J. A. S. B.* xiv, p. 193.
Tiga shorei, *Blyth, Cat.* p. 56, partim?; *Hume, S. F.* iii, p. 73, partim; *id. Cat.* no. 183; *Davison, S. F.* ix, p. 357; *Hargitt, Cat. B. M.* xviii, p. 417.
Chrysonotus shorei, *Horsf. & M. Cat.* ii, p. 658; *Jerdon, B. I.* i, p. 298; *Anderson, Yunnan Exped., Aves,* p. 586; *Ball, S. F.* vii, p. 206.
Chrysonotus biddulphi, *Tickell, Walden, Ibis,* 1876, p. 344; *Hume, S. F.* v, p. 497.

The Large Three-toed Woodpecker, Jerdon.

Very similar to *T. javanensis*. The differences are that in the present species there are two broken black lines down the throat and fore neck, the space between them being isabelline, as is the malar region and sometimes the breast in part. There is less black on the lower parts throughout. There is no black or blackish bar behind the crimson tips of the coronal feathers in the male, and the bases of the feathers are paler ashy; whilst in the female the feathers on the top of the head are brown with long white shaft-lines.

Bill blackish slaty; irides crimson; legs plumbeous (*Jerdon*).

Length about 12; tail 4·25; wing 6; tarsus 1·05; bill from gape 1·6.

Distribution. The lower valleys of the Himalayas from Dehra Dún to Bhután, also Bhámo and the neighbourhood of Thayet Myo in Upper Pegu. It is remarkable that neither this species nor the last appears to have been observed in the countries between Burma and the Himalayas. Reported occurrences of *T. shorei* in the Indian Peninsula need confirmation; they may have been founded on large specimens of *T. javanensis*, but one in Blyth's Catalogue, from Goomsur, should not be forgotten.

It is on the whole doubtful whether this form should be kept separate from *T. javanensis*.

Genus **GAUROPICOIDES**, Malherbe, 1861.

Three toes only, the hallux or inner posterior toe wanting; hind toe shorter than outer fore toe. Bill with the culmen straight and sharply angulate, the nasal ridge well marked, near the culmen; nostrils at base of bill, nasal plumes short, but covering the nostrils. Tail-feathers narrow, all pointed except the outer pair, which are but little shorter than the next. Wings very rounded.

Coloration yellow above, brown below, the head banded with black and white at the side; male with a red, female with a black cap. A single species.

990. **Gauropicoides rafflesi.** *Raffles's Three-toed Woodpecker.*

Picus rafflesii, *Vigors, Raffl. Mem., App.* p. 669 (1830).
Tiga rafflesi, *Strickland, P. Z. S.* 1846, p. 103; *Blyth, J. A. S. B.* xv, p. 16; *id. Cat.* p. 57.
Chrysonotus rafflesi, *Horsf. & M. Cat.* ii, p. 658.
Gauropicoides rafflesi, *Malh. Picidæ,* i, p. liii; *Hume, S. F.* iii, p. 319; *id. Cat.* no. 185 bis; *Hume & Dav. S. F.* vi, p. 146; *Oates, B. B.* ii, p. 42; *Hargitt, Cat. B. M.* xviii, p. 132.

Coloration. Male. Whole cap, nape, and long pointed nuchal crest bright crimson; nasal plumes and lores pale brown; lower lores and a band from them under the eye to far down the side of the neck white, also a white supercilium from above the eye to the nape; a band down the back of the neck, a line above the supercilium, a broad band below it from the eye, and a third line from the base of the lower mandible black, the lowest line is narrow and brown at first but broader behind; back, scapulars, secondary-coverts, and outer webs of secondaries golden olive, the edges of the feathers brighter; rump-feathers the same, but the edges sometimes tinged with red; primary-coverts and wing-feathers blackish brown, the inner webs of the latter with a few round white spots towards the base, the primaries tipped with whitish and having occasionally a few very small pale spots on the outer webs; upper tail-coverts dark brown; tail black; chin and throat white sullied with fulvous; remaining lower parts olive-brown, the flanks and under wing-coverts spotted white.

Female. The crimson of the head and nape is replaced by black; forehead yellowish brown.

Upper mandible and tip of lower black or bluish, rest of lower mandible plumbeous; irides deep brown; legs and feet dark green.

Length 12; tail 4·6; wing 5·7; tarsus 1; bill from gape 1·5.

Distribution. The Malay Peninsula, ranging into Tenasserim to a little north of the latitude of Moulmein; also Sumatra and Borneo.

Habits, &c. According to Davison this Woodpecker much resembles *Tiga javanensis* in its habits and voice. It keeps to evergreen forests, is found singly or in pairs, and is not shy. It is seen on fallen trees but not on the ground.

Genus **CHRYSOCOLAPTES**, Blyth, 1843.

Bill stout and long, culmen nearly straight; nasal ridge strongly marked, commencing at base of bill halfway between culmen and commissure; nostrils elongate, exposed. Feet large, first or hind toe well developed; fourth toe longer than third; claws very large. Head large and conspicuously crested, neck very small. Outer pair of tail-feathers just exceeding the coverts in length. Plumage very like that of *Brachypternus*; yellow or red above; white, the feathers edged with black, below.

Key to the Species.

a. Crown of male red, of female yellow; back black	*C. festivus*, p. 64.
b. Crown of male red, of female black with white spots.	
a′. Back golden olive	*C. gutticristatus*, p. 65.
b′. Back red	*C. stricklandi*, p. 67.

991. **Chrysocolaptes festivus.** *The Black-backed Woodpecker.*

Picus festivus, *Boddaert, Tabl. Pl. Enl.* p. 43, no. 696 (1783).
Picus goensis, *Gmel. Syst. Nat.* i, p. 434 (1788).
Dendrocopus elliotii, *Jerdon, Madr. Jour. L. S.* xi, p. 212 (1840).
Picus (Chrysocolaptes) melanotus, *Blyth, J. A. S. B.* xii, p. 1005 (1843).
Chrysocolaptes goensis, *Blyth, Cat.* p. 55; *Jerdon, B. I.* i, p. 282.
Chrysocolaptes festivus, *Blyth, Ibis,* 1866, p. 355; *Blanford,*

J. A. S. B. xxxviii, pt. 2, p. 168; *Adam, S. F.* i, p. 373; *Ball, S. F.* ii, p. 391; vii, p. 206; *Butler, S. F.* iii, p. 458; ix, p. 385; *Hume, Cat.* no. 167; *Vidal, S. F.* ix, p. 52; *Legge, Birds Ceyl.* p. 191; *Davidson, S. F.* x, p. 297; *Hume, ib.* p. 355; *Barnes, Birds Bom.* p. 115; *Hargitt, Cat. B. M.* xviii, p. 445; *Oates in Hume's N. & E.* 2nd ed. ii, p. 312.

Coloration. Male. Forehead with large buffy-white spots on a brown ground; long feathers of crown and occiput crimson, a black border, often mixed with white anteriorly, to the crown; hind neck and middle of upper back white; remainder of back, scapulars, smaller wing-coverts along the forearm, tail-coverts and tail black; larger and median secondary-coverts olive with golden-yellow edges, outer webs of secondaries golden olive, rest of quill-feathers brownish black, all outer webs with spots, brownish or greenish outside, white inside, inner webs with large white spots; sides of head and neck and underparts white or buffy white, except a broad black band from each eye down the side of the neck, two black lines on each malar region, the two meeting at the side of the throat, and a median line down the throat, or five lines in all; breast-feathers with broad black lateral margins producing a striped appearance, abdominal with narrower and less defined borders; under tail-coverts mixed black and white.

Female. Coronal and occipital feathers golden yellow, broad forehead spotted as in the male. In young males the crest-feathers are dull scarlet, in young females the yellow crest-feathers have red tips.

Bill dusky blackish; irides crimson; legs and feet horny plumbeous (*Jerdon*).

Length about 12·5; tail 3·5; wing 6·25; tarsus 1·1; bill from gape 2·2.

Distribution. This Woodpecker is found throughout the greater part of the Indian Peninsula and Ceylon, in forest-tracts, ranging to Dehra Dún and the Oudh Terai in the north, the Aravalli Hills to the west, Behar and Chutia Nagpur to the east. On the Malabar coast it appears to be much less common than the next species, but has been recorded from Ratnagiri, Goa, and the Nilgiris. It is, as a rule, rare or very locally distributed.

Habits, &c. This, though a forest bird, is not an inhabitant of thick jungle, and has been observed in cultivation occasionally. According to Davidson it breeds in the hills around Khandesh in November, December, and January, and lays a single white egg in a hole in a tree as usual. Generally a new hole is cut out every year.

992. **Chrysocolaptes gutticristatus.** *Tickell's Golden-backed Woodpecker.*

Picus guttacristatus, *Tickell, J. A. S. B.* ii, p. 578 ♀ (1833).
Picus sultaneus, *Hodgs. J. A. S. B.* vi, p. 105 (1837).
Picus strictus, *apud Jerdon, Madr. Jour. L. S.* xi, p. 210.

Chrysocolaptes sultaneus, *Blyth, Cat.* p. 55; *id. Ibis,* 1866, p. 355; *Horsf. & M. Cat.* ii, p. 653; *Jerdon, B. I.* i, p. 281; *id. Ibis,* 1872, p. 8; *Hume & Oates, S. F.* iii, p. 64; *Armstrong, S. F.* iv, p. 310; *Hume & Inglis, S. F.* v, p. 26; *Hume & Dav. S. F.* vi, p. 133; *Hume, Cat.* no. 166; *Anderson, Yunnan Exped., Aves,* p. 584; *Vidal, S. F.* ix, p. 52; *Hume, S. F.* xi, p. 61.

Indopicus sultaneus (*Hodgs.*) *and* I. delesserti, *Malh. Mém. Acad. Metz,* 1848–49, p. 343.

Chrysocolaptes delesserti, *Blyth, Ibis,* 1866, p. 355; *Hume, S. F.* iii, p. 64; *Bourdillon, S. F.* iv, p. 389; *Fairbank, S. F.* v, p. 396; *Dav. & Wend. S. F.* vii, p. 78; *Ball, S. F.* vii, p. 205; *Hume, Cat.* no. 166 bis; *Barnes, Birds Bom.* p. 114.

Chrysocolaptes gutticristatus, *Jerdon, Ibis,* 1872, p. 8; *Blyth & Wald. Birds Burm.* p. 75; *Fairbank, S. F.* iv, pp. 255, 265; *Hargitt, Cat. B. M.* xviii, p. 448; *Oates in Hume's N. & E.* 2nd ed. ii, p. 313.

Chrysocolaptes strictus, *apud Hume, S. F.* viii, p. 154; *Butler, S. F.* ix, pls. 238, 385; *Davison, S. F.* x, p. 354; *Oates, B. B.* ii, p. 53.

The Golden-backed Woodpecker, Jerdon; *Tashi-on-bau,* Lepcha.

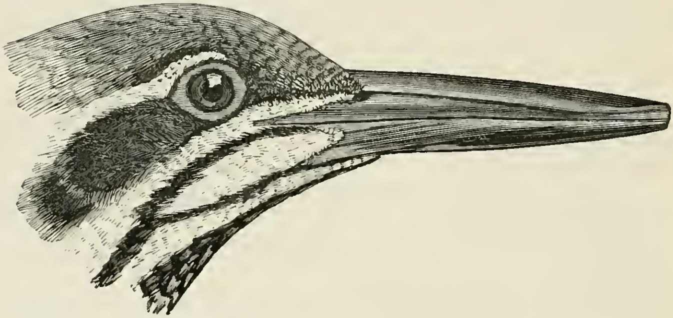

Fig. 17.—Head of *C. gutticristatus,* ♂.

Coloration. Male. Forehead and border of crown to above eye brown, crown and occiput covered with long crimson feathers and bordered with black; hind neck in the middle white, the feathers often bordered with black and the white more or less reduced to spots; back, scapulars, and whole outer surface of wings, except primary-coverts and outer webs of primaries, golden olive, the feathers with bright golden or sometimes scarlet edges; quills and primary-coverts brown, inner webs with round white spots, tips of primaries often pale; rump crimson; upper tail-coverts and tail black. Sides of head and neck and lower parts as in *C. festivus,* except that there is more black, especially on the fore neck and breast, which are generally black with white spots.

Females have the crown and occiput black with round white spots. In young males the forehead is coloured as in females.

Bill bluish brown; iris pinkish yellow; eyelids dark slaty brown; legs greenish blue (*Oates*).

Length about 13; tail 4·25; wing 6·5 (varying from 5·85 to 7·45); tarsus 1·3; bill from gape 2.

Distribution. Throughout the Lower Himalayas as far west as Dehra Dún, rare in Lower Bengal, Manbhoom (*Beavan*), Dholbhum and Borabhum (*Tickell*), and common in the neighbourhood of the Malabar coast from western Khandesh to Cape Comorin. This species has not been recorded from other parts of the Indian Peninsula, but east of the Bay of Bengal it appears to be found from Assam throughout Burma and the neighbouring countries to Singapore, Siam, and Cochin China.

The Malabar race (wing 5·8–6·3; culmen 1·7–1·9) is much smaller than the Himalayan (wing 6·7–7·45; culmen 2–2·4) and has been distinguished as *C. delesserti*; but Hume has shown that in Burma there is a complete gradation between the two, and that Malay Peninsula birds are small like those from Malabar. In many species of Oriental birds and mammals the size diminishes to the southward. The true *C. strictus* is peculiar to Java, and is distinguished by the female having a yellow head as in *C. festivus*.

Habits, &c. This bird is found both in thick forest and in cultivation, and in Burma often haunts trees on the banks of streams. It has, Jerdon says, a high-pitched, faint, screaming note, quite unlike the loud and harsh call of *Brachypternus aurantius*. It also, like others of this genus, makes a great noise when tapping by repeating its strokes with unusual rapidity. It breeds on the Nilgiris between 5500 and 7000 feet in December, January, and February, and in the northern Satpuras near Bombay in March, making a large hole in the trunk of a tree from 6 to 60 feet from the ground, and laying a single white egg.

993. **Chrysocolaptes stricklandi.** *Layard's Woodpecker.*

Brachypternus stricklandi, *Layard, A. M. N. H.* (2) xiii, p. 449 (1854).

Chrysocolaptes stricklandi, *Blyth, Ibis*, 1867, p. 297; *Holdsworth, P. Z. S.* 1872, p. 427; *Legge, Ibis*, 1874, p. 15; 1875, pp. 283, 410; *id. S. F.* iii, p. 200; *id. Birds Ceyl.* p. 188, pl. vii; *Holdsworth, Ibis*, 1874, p. 123; *Hume, S. F.* vii, p. 368; *id. Cat.* no. 166 ter; *Hargitt, Cat. B. M.* xviii, p. 453; *Oates in Hume's N. & E.* 2nd ed. ii, p. 313.

Coloration. Back, scapulars, and outer surface of wings, except primary-coverts and outer webs of primaries, dull crimson, edges of feathers brighter, rump also brighter. In all other respects this species resembles *C. guttieristatus* except that there is everywhere more black and less white, there are only white spots on the back of the neck, and the sides of the head above the malar region and of the neck are almost all black, the superciliary stripe being represented by a row of white spots. The black borders of the breast-feathers are very broad. Sexual distinctions as in *C. guttieristatus*.

Bill brownish or olivaceous at the base, greenish white in the middle, the tip dusky; iris yellowish white; legs and feet greenish slate (*Legge*).

Length about 11·5; tail 3·5; wing 5·9; tarsus 1·1; bill from gape 1·9.

Distribution. Confined to Ceylon. This Woodpecker is found in forests almost throughout the island, on both hills and lowlands.

Habits, &c. Similar to those of *C. gutticristatus.* Legge observed birds of this species haunting a nest-hole high up a large tree in January in such a manner as to indicate that they had young.

Genus **HEMICERCUS**, Swainson, 1837.

Size small; bill straight, compressed towards the end, nasal ridge well marked, beginning at the base halfway between culmen and commissure and extending half the distance to the tip; nostrils covered with plumes; feet very large, hallux well developed, fourth toe longer than third; a long crest on the occiput and nape; neck very slender; tail very short, but little exceeding the tail-coverts and only about one-third the length of the wing, the tail-feathers rounded at the end, outer pair distinctly shorter. Plumage black or dark olivaceous grey and buff. Both sexes have in the middle of the back a tuft of bristly feathers smeared with a viscid secretion having a peculiar resinous scent.

Only three species are known, of which one is peculiar to Java, the others inhabit India and Burma.

Key to the Species.

A. Crown red in males, olive-grey like remainder of head in females, ruddy buff in young	*H. sordidus,* p. 68.
B. Crown black with white specks in males, buff in females and young	*H. canente,* p. 69.

994. **Hemicercus sordidus.** *The Grey-and-Buff Woodpecker.*

Dendrocopus sordidus, *Eyton, A. M. N. H.* xvi, p. 229 (1845).
Hemicercus concretus (*Temm.*), *apud Blyth, J. A. S. B.* xiv, p. 195; *id. Cat.* p. 54; *Horsf. & M. Cat.* ii, p. 650.
Hemicercus sordidus, *Tweeddale, Ibis,* 1877, p. 291; *Hume & Dav. S. F.* vi, p. 128; *Hume, Cat.* no. 165 bis A; *Oates, B. B.* ii, p. 32; *Hargitt, Ibis,* 1884, p. 247; *id. Cat. B. M.* xviii, p. 483.

Coloration. Male. Forehead and crown crimson; coronal feathers elongate, the crimson cap tapering to a point on the occiput; long nuchal crest, with the sides of the head and neck, chin, throat, and breast olivaceous grey; hind neck buff; back, scapulars, wing-coverts, and tertiaries black, each feather with a buff margin and many with a buff bar across the middle; remaining quills brownish black except the inner margin towards the base, which, with the rest of the wing-lining, is buff; on the secondaries some triangular buff spots appear on the outer webs, which gradually increase till they become bars on the tertiaries; lower back uniform grey; rump buff; upper and lower tail-coverts black tipped with buff;

tail black, the outer feathers barred and tipped with buff; a slight trace of a buff line down the side of the neck; abdomen grey, with buffy-white edges to the feathers.

Female. Forehead and crown olive-grey like the rest of the head.

In the young of both sexes the crown and long nuchal crest are ruddy buff, the feathers tipped with olive-grey; in males the long nuchal feathers become partly crimson, as these become olive-grey the crown becomes crimson, the passage being gradual. The whole mantle is buff with black spots, the rump-feathers are edged with grey, and those of the lower parts with buff in very young birds.

Bill plumbeous grey; irides red-brown; legs and feet plumbeous, tinged greenish (*Davison*).

Length 5·5; tail 1·2; wing 3·4; tarsus ·6; bill from gape 1.

Distribution. The Malay Peninsula, Sumatra, and Borneo, ranging north into the extreme south of Tenasserim, a single specimen having been obtained by Mr. Davison at Bankasún.

995. **Hemicercus canente.** *The Heart-spotted Woodpecker.*

Picus canente, *Less. Cent. Zool.* p. 215, pl. 73 (1830).

Hemicercus canente, *Blyth, J. A. S. B.* xv, p. 282; *id. Cat.* p. 54; *Horsf. & M. Cat.* ii, p. 650; *Jerdon, B. I.* i, p. 280; *Hume, S. F.* iii, p. 61; *id. Cat.* no. 165 bis; *id. S. F.* xi, p. 61; *Blyth & Wald. Birds Burm.* p. 74; *Walden, Ibis,* 1876, p. 344; *Hume & Inglis, S. F.* v, p. 25; *Butler, ibid.* p. 503; *Hume & Dav. S. F.* vi, pp. 127, 500; *Bingham, S. F.* ix, p. 161; *Oates, B. B.* ii, p. 30; *Hargitt, Ibis,* 1884, p. 252; *id. Cat. B. M.* xviii, p. 486; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 564; *Oates in Hume's N. & E.* 2nd ed. ii, p. 314.

Hemicercus cordatus, *Jerdon, Madr. Jour. L. S.* xi, p. 211 (1840); *id. Ill. Ind. Orn.* pl. xl; *Blyth, Ibis,* 1866, p. 354; *Hume & Bourd. S. F.* iv, p. 389; *Hume, Cat.* no. 165; *Butler, S. F.* ix, p. 385; *Davison, S. F.* x, p. 354; *Hargitt, Ibis,* 1884, p. 257; *id. Cat. B. M.* xviii, p. 488; *Barnes, Birds Bom.* p. 114.

Coloration. Male. Top and sides of head with long occipital crest, nape and sides of neck, back, scapulars, upper and lower tail-coverts, and tail black, the forehead and anterior portion of crown with minute white spots; a band round the hind neck, connected with a median patch on the interscapulary tract and running forward along the sides of the neck to the chin, including the throat and malar region, buff, as are also all the wing-coverts along the forearm, the wing-lining, and the rump; quills black, margined with buff towards the base of the inner webs; tertiaries and a few of the larger and median coverts buff, each with a heart-shaped black spot near the end; fore neck, breast, and abdomen dusky olive, darker behind, flanks black.

In the *female* and in the young of both sexes the forehead and crown are buff.

Bill black; irides dark reddish brown; legs and feet very dark green, sometimes appearing almost black (*Davison*).

In males, length 6·4; tail 1·4; wing 3·9; tarsus ·7; bill from gape 1·1. Females are rather smaller: wing 3·7; bill from gape ·9.

The Malabar variety *H. cordatus* measures less on an average (wing in males about 3·7, in females 3·6), but small Burmese specimens are identical in measurement with large Malabar skins. The Malabar form has, as a rule, a more slender but not a shorter tarsus. I can find no characters by which the two geographical races can be constantly distinguished.

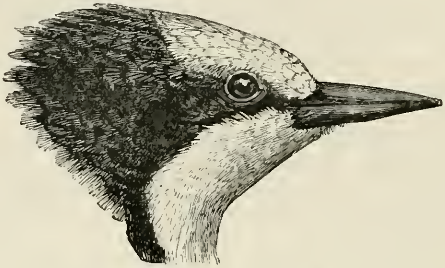

Fig. 18.—Head of *H. canente.*

Distribution. Throughout the Burmese countries from Cachar in the north to Kussoom, about 150 miles south of the Tenasserim frontier in the Malay Peninsula, ranging eastward to Siam, Cambodia, and Cochin China. Also in the forests along the Malabar coast of India both below and above the Ghats from Khandála to Cape Comorin. The only place in the interior of the Peninsula whence this bird has been reported is in the Chánda forests, where Jerdon says he found it. I was on two occasions for some months each time in the forests around Chánda and certainly never saw it, nor has it been observed in the Central Provinces since Jerdon's time. Jerdon does not say he obtained specimens; and although he very rarely made a mistake, I think the occurrence of this species in the Indian Peninsula, except in the Malabar tract, needs confirmation.

Habits, &c. Found in pairs, sometimes in families, in forest or clearings, usually haunting the tops of high trees. The note is peculiar, rather loud and long, and is frequently uttered. The eggs, usually two in number, have been found by Mr. Inglis in Cachar in March, by Major Bingham and Mr. Davison in Tenasserim in December and March, and by Mr. Darling near Kussoom, Malay Peninsula, in July: they are white and glossy, deposited on chips in a hole made in a tree, and measure about ·9 by ·7.

Genus **HEMILOPHUS**, Swainson, 1837.

Size very large. Bill large, culmen curved at the base, then straight, tip compressed and chisel-shaped; nasal ridge well developed, near the culmen, continued almost to the tip; nostrils large, rounded, covered with plumes; feet and claws large; hallux well-developed; fourth toe shorter than third; wings and tail long; tail-feathers very strong and pointed, the outer pair just extending beyond the coverts; feathers of the head short, harsh and scaly; no crest. Plumage ashy.

A single species, which is the largest Indian Woodpecker.

996. **Hemilophus pulverulentus.** *The Great Slaty Woodpecker.*

Picus pulverulentus, *Temm. Pl. Col.* pl. 389 (1826).
Picus gutturalis, *Valenc. Dict. Sc. Nat.* xl, p. 178 (1826).
Hemilophus pulverulentus, *Swains. Classif. B.* ii, p. 309; *Blyth, Cat.* p. 54; *id. J. A. S. B.* xxiii, p. 215; *Blanf. Ibis*, 1870, p. 464; *Hargitt, Cat. B. M.* xviii, p. 494; *Oates in Hume's N. & E.* 2nd ed. ii, p. 315.
Mulleripicus pulverulentus, *Bonap. Consp. Volucr. Zygod.* p. 7; *Horsf. & M. Cat.* ii, p. 651; *Jerdon, B. I.* i, p. 284; *id. Ibis*, 1872, p. 9; *Godw.-Aust. J. A. S. B.* xliii, p. 155; *Hume & Dav. S. F.* vi, p. 133; *Hume, Cat.* no. 168; *Bingham, S. F.* ix, pp. 141, 162, 472.
Alophonerpes gutturalis, *Cab. & Heine, Mus. Hein.* iv (2), p. 106; *Blyth & Wald. Birds Burm.* p. 75.
Mulleripicus gutturalis, *Hume & Oates, S. F.* iii, p. 66.
Alophonerpes pulverulentus, *Wardl.-Rams. Ibis*, 1877, p. 457; *Oates, B. B.* ii, p. 29.

Coloration. Male. Ashy grey; head paler, especially in front, all feathers of forehead, crown, neck, and breast with small pale tips; a large dull pale crimson patch in the malar region below the eye; chin, throat, and fore neck saffron-yellow, tinged with red, especially on the fore neck, the feathers of the yellow area short and stiff; whole body slaty ash, paler and isabelline round the vent; quills and tail-feathers darker; outer webs of primaries sometimes tipped pale.

The *female* wants the red malar patch, and the throat and fore neck are yellow without any red. In young males the forehead and greater part of the crown are tinged with pale crimson.

Bill bluish white, black on the culmen and tips of both mandibles; mouth bluish black; eyelids plumbeous; iris dark hazel-brown; legs dark plumbeous; claws bluish (*Oates*).

Length of males about 20; tail 7; wing 9; tarsus 1·55; bill from gape 3: females rather less.

Distribution. The Terai and base of the Himalayas, as far west as Kumaun (or, perhaps, Dehra Dún), not common; also from Assam throughout Burma to Cochin China, Sumatra, Java, and Borneo, sparingly distributed as a rule, but common in a few localities.

Habits, &c. This grand Woodpecker is a denizen of high forests, and especially of hilly tracts, and is generally seen high up the stems and upper branches of trees, keeping in small parties of from three or four to ten or twelve, and very noisy, often uttering a peculiar querulous call. The nest was found by Bingham during the rains in a Kanyin tree (*Dipterocarpus alatus*) that had been blown down and used as a bridge over a stream. The birds had made a hole 3½ inches in diameter, extending a foot inwards and then 8 inches downwards. The hole contained two fresh glossy white eggs, measuring 1·41 × 1·11.

Genus **THRIPONAX**, Cab. & Heine, 1863.

This genus is structurally very similar to *Hemilophus*, except that it has a well-marked nuchal crest, and that the feathers of the head are of the ordinary texture. The bill is not quite so long as in *Hemilophus*, and the nasal ridge is farther from the culmen, though still nearer to it, at the base of the bill, than to the commissure. The plumage in *Thriponax* is chiefly black, in most species with some white on the body; the cap and a malar patch are red in males, in females of all Indian species the occiput and nape retain the red colour.

The genus occurs in Malabar, throughout Burma and the Malay countries, in the Philippines, and Korea. There are four Indian species.

Key to the Species.

a. Rump white.
  a′. Primaries black throughout, or nearly so .... *T. hodgsoni*, p. 72.
  b′. Basal half of inner webs of primaries white .. *T. feddeni*, p. 73.
b. Rump black.
  c′. Abdomen white .... *T. javensis*, p. 74.
  d′. No white in plumage .... *T. hodgii*, p. 75.

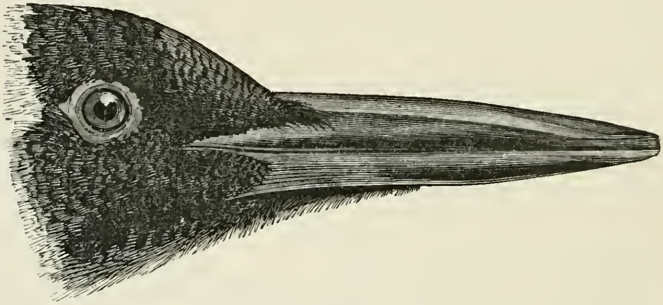

Fig. 19.—Head of *T. hodgsoni*.

997. **Thriponax hodgsoni.** *The Malabar Great Black Woodpecker.*

Hemilophus hodgsonii, *Jerdon, Madr. Jour.* xi, p. 215, pl. ii (1840); *Blyth, Cat.* p. 55.
Picus hodgsonii, *Jerdon, Ill. Ind. Orn.* pl. v.
Mulleripicus hodgsoni, *Jerdon, B. I.* i, p. 284.
Thriponax hodgsoni, *Hume, S. F.* iii, p. 67; *id. Cat.* no. 169; *Hume & Bourdillon, S. F.* iv, p. 390; *Butler, S. F.* ix, p. 386; *Davison, S. F.* x, p. 355; *McGregor, ibid.* p. 437; *Hargitt, Ibis,* 1885, p. 150; *id. Cat. B. M.* xviii, p. 503; *Barnes, Birds Bom.* p. 116; *Davidson, Jour. Bomb. N. H. Soc.* vi, p. 335.

The Great Black Woodpecker, Jerdon.

Coloration. Male. Forehead, crown, nape, and large malar patch on each side crimson; lower back and rump, lower breast and upper part of abdomen, flanks, axillaries, and basal portion (1–1·15 inches long) of inner webs of secondaries buffy white; remainder of plumage black.

Female. The crimson is confined to the occiput and nape, all the remainder of the head black.

Bill black; irides crimson; legs dark plumbeous (*Jerdon*).

Length of males about 19, of females 17·5; tail 7; wing 8·5; tarsus 1·5; bill from gape 2·6.

Distribution. Forests near the Malabar coast up to an elevation of about 3000 feet or rather higher, from Travancore to west of Belgaum (16° N. lat.). Not recorded farther north.

Habits, &c. A shy bird, not noisy, usually found in pairs, sometimes in parties of three to six. It keeps generally to evergreen forest and has a loud, not unpleasant, call-note. The eggs are not known with certainty, and Davidson thinks it lays one only, as he never saw more than three birds together.

998. **Thriponax feddeni.** *The Burmese Great Black Woodpecker.*

Mulleripicus feddeni, *Blanford, Blyth, J. A. S. B.* xxxii, p. 75 (1863).
Thriponax jerdoni, *Cab. & Heine, Mus. Hein.* iv (2), p. 105 (1863).
Hemilophus feddeni, *Blanf. Ibis*, 1870, p. 464.
Thriponax feddeni, *Walden, Ibis*, 1871, p. 164; *Bingham, S. F.* viii, p. 194; ix, p. 162; *Hume, S. F.* viii, p. 409; *Oates, B. B.* ii, p. 28; *Hargitt, Ibis*, 1885, p. 152; *id. Cat. B. M.* xviii, p. 504; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 578.
Thriponax crawfurdi, *apud Hume, S. F.* iii, p. 66; *Blyth & Wald. Birds Burm.* p. 75; *Hume & Dav. S. F.* vi, p. 134; *Hume, Cat.* no. 169 ter, *nec* Picus crawfurdii, *Gray* *.

Coloration very similar to that of *T. hodgsoni*, but distinguished by the much larger extent of the white or creamy-white area on the lower parts, where the white extends from the middle breast to the vent inclusive, on the rump where it sometimes extends to the tail-coverts, and especially inside the wings, the basal half or nearly half of the inner webs of all quills being white; some of the outer primaries generally white-tipped; some white mixed with the black on the sides of the head, and on the chin and throat. Sexual distinctions as in *T. hodgsoni.*

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* *Picus crawfurdii* was described in 1829 by Dr. J. E. Gray (Griffith's Cuv. An. King., Birds, ii. p. 513, fig.) from a coloured drawing made by a native artist for Mr. Crawfurd, by whom the drawing was brought to England. No specimen of the bird has ever been examined by a naturalist, and as in many similar cases, where names have been given to figures, it has proved impossible to recognize the species. The following description was taken by Dr. Gray from the drawing:—

"The whole upper part (except the crest) is deep dark brown, sprinkled with grey on the sides of the neck; across the breast is a large lunule patch of slate-colour with small dark waves; the belly is yellow, with the like crescent-shaped spots, and the crest is deep red."

It should be added that in the figure the crown (not the forehead) is red, and there is no red malar patch. The black rump distinguishes the figure from *T. feddeni*. I strongly suspect the drawing to have been an inaccurate representation of a female *T. javensis*. Mr. Crawfurd, however, resided for a considerable time in Ava, where *T. feddeni* occurs.

Bill slaty; irides yellow; legs and feet plumbeous; claws horny (*Bingham*).

Length about 16: tail 6; wing 8·5; tarsus 1·4; bill from gape 2·2: the female as large as the male.

Distribution. Throughout the greater part of Burma from Bhamo in the north to the hills east of Moulmein (Kokarit). This bird has also been sent from Siam and Cochin China.

Habits, &c. A forest-bird found also in clearings, and generally observed in pairs on saplings and small trees. According to Captain Feilden and Mr. Davison the flight is peculiar and noiseless—the blows given by the bill when tapping are loud but slow, not quickly repeated like those of *Brachypternus*, *Chrysocolaptes*, and *Hemilophus.* The call is not loud but is characteristic, somewhat resembling a Jackdaw's. The nidification has not been observed.

999. **Thriponax javensis.** *The Malay Black Woodpecker.*

Picus javensis, *Horsfield, Trans. Linn. Soc.* xiii, p. 175 (1821).
Picus leucogaster, *Valenc. Dict. Sc. Nat.* xl, p. 178 (1826).
Hemilophus javensis, *Blyth, Cat.* p. 55.
Mulleripicus javensis, *Horsf. & M. Cat.* ii, p. 652.
Thriponax javensis, *Blyth, Birds Burm.* p. 75; *Hume, S. F.* iii, p. 319; *id. Cat.* no. 169 quat.; *Hume & Dav. S. F.* vi, p. 135; *Oates, B. B.* ii, p. 27; *Hargitt, Ibis,* 1885, p. 145; *id. Cat. B. M.* xviii, p. 498.

Coloration. Male. Forehead, crown, nape, and a large malar patch crimson; lower breast, abdomen, flanks, axillaries, and the inner webs near the base of some of the quills, chiefly secondaries, creamy white; all the rest of the plumage black, small white streaks intermixed on sides of neck behind ear-coverts, and on chin and throat; sometimes a white tip to each of the outer primaries.

In the *female* the crimson is confined to the occiput and nape.

Bill black, lower mandible plumbeous; iris creamy white or yellow; orbital skin dark plumbeous; legs and feet pale plumbeous (*Davison*).

Length about 17; tail 7; wing 9; tarsus 1·4; bill from gape 2·4.

Distribution. The Malay Peninsula, ranging into the extreme south of Tenasserim, also Sumatra, Java, Borneo, and several of the Philippine Islands.

Habits, &c. Similar to those of *T. feddeni.*

1000. **Thriponax hodgii.** *The Andaman Black Woodpecker.*

Mulleripicus hodgei, *Blyth, J. A. S. B.* xxix, p. 105 (1860); *Beavan, Ibis*, 1867, p. 320; *Ball, J. A. S. B.* xxxix, pt. 2, p. 241; xli, pt. 2, p. 279; *id. S. F.* i, p. 63.

Thriponax hodgei, *Walden, Ibis*, 1873, p. 301; *Hume, S. F.* ii, p. 189; *id. Cat.* no. 169 bis; *Hargitt, Ibis*, 1885, p. 142; *id. Cat. B. M.* xviii, p. 502.

Coloration. The forehead, crown, nape, and malar patch crimson in the *male*, occiput and nape only in the *female*, all the rest of the plumage black.

Bill black, in some specimens, not in all, whitish and semi-transparent at the tip; irides pale yellow; legs, feet, and claws blackish plumbeous (*Hume*).

Length about 15; tail 6; wing 7·5; tarsus 1·3; bill from gape 1·9.

Distribution. The Andaman Islands.

Habits, &c. This Woodpecker is said by Davison to keep to the larger trees, to have a shrill rasping whistle, and to make a great noise tapping. He shot the young well grown at the end of March.

Picus or *Dryocopus martius* was at one time believed by Hume to inhabit part of the Khirthar range, Sind. I have been all over the range, which is very barren and treeless, and there is no part suited for this bird; moreover I ascertained when in Sind that the native story told to Mr. Hume about the occurrence of a black Woodpecker (S. F. i, pp. 129, 171) at Dharyáro was a hoax.

Subfamily PICUMNINÆ.

This subfamily consists of the smallest forms of the group, distinguished by having flexible tail-feathers and short tails, by their nostrils being always covered with dense plumes and bristles, and, according to Mr. W. Kitchen Parker, by a less developed type of palatal structure. The *Picumninæ* or Piculets, as they have been called, climb less and perch more than the true Woodpeckers, which, however, they resemble in food and in nidification. They are found in the Oriental region, Africa, and South America. Two genera are Indian.

Key to the Genera.

Toes 4; orbital region feathered.................. Picumnus, p. 75.
Toes 3; orbital region naked .... Sasia, p. 77.

Genus **PICUMNUS,** Temminck, 1825.

Size small. Bill conical, compressed, pointed, the culmen slightly curved and angulate, the nostrils and chin-angle concealed by dense plumes with black bristles projecting. Wing and tail rounded. Toes 4. Orbits feathered. Plumage soft, lax, and elongate.

A large genus comprising 33 species, of which all but two are South American; one inhabits China, and one is Indian.

1001. **Picumnus innominatus.** *The Speckled Piculet.*

Picumnus innominatus, *Burton, P. Z. S.* 1835, p. 154; *Blyth, Cat.* p. 65; *Hargitt, Cat. B. M.* xviii, p. 549; *Oates in Hume's N. & E.* 2nd ed. ii, p. 316.

Vivia nipalensis, *Hodgson, J. A. S. B.* vi, p. 107 (1837).

Vivia innominata, *Horsf. & M. Cat.* ii, p. 677; *Jerdon, B. I.* i, p. 300; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 21; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; *Blyth & Wald. Birds Burm.* p. 78; *Hume, S. F.* v, p. 351; xi, p. 64; *id. Cat.* no. 186; *Scully, S. F.* viii, p. 250; *Hargitt, Ibis,* 1881, p. 223; *id. Cat. B. M.* xviii, p. 549; *Bingham, S. F.* ix, p. 165; *Inglis, ibid.* p. 247; *Davison, S. F.* x, p. 357; *Oates, B. B.* ii, p. 24.

Wi-wi, Nepal; *Dang-chim,* Lepcha.

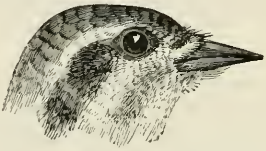

Fig. 20.—Head of *P. innominatus.*

Coloration. Male. Nasal plumes yellowish white, with black bristles projecting; forehead olive; sincipital feathers black with reddish-orange borders, occiput and hind neck olive; a broad band from the eye down the side of the neck blackish olive; a malar stripe the same but mixed with white; two yellowish-white bands down each side of the neck, one from above the eye, the other below the eye and ear-coverts, and including the lores; back, scapulars, and rump bright yellow-olive; outside of wings the same, becoming duller on the coverts; inside of quills brown; yellowish white on the inner margins; tail blackish brown, inner webs of middle pair of feathers white, each feather of the two outer large pairs and the small outermost pair with a broad oblique white bar close to the tip; chin and throat white, breast and abdomen pale yellow, all with large black spots; flanks barred; wing-lining white.

Female. The whole crown olive.

Bill plumbeous black; irides brown; feet dark plumbeous (*Scully*).

Length about 4; tail 1·4; wing 2·3; tarsus ·52; bill from gape 0·5.

Distribution. Throughout the Himalayas as far west as Murree, ranging from about 1500 to 6000, or even in places, according to Stoliczka, 9000 feet above the sea. This species has also been found very rarely in the hills of Southern India near the west coast, by Mr. J. Darling in the Wynaad, and by Mr. W. Davison below Kotagiri on the Nilgiris. To the eastward it is found in Assam, Cachar, and Manipur, and very sparingly in Burma, the Malay Peninsula, and Sumatra. In Burma it has hitherto only been recorded from Karennee by Wardlaw Ramsay, and from Tenasserim by Blyth and Bingham.

Habits, &c. According to Jerdon this bird is found in tangled brushwood and among dead and fallen trees in damp spots. Scully, however, observed it on trees near Katmandu. To the eastward it haunts bamboos. It feeds on various insects, and, according to Mr. R. Thompson, on the eggs and larvæ of wood-boring beetles. It breeds in April and May, making a hole precisely like that of a typical Woodpecker, sometimes in the stem, sometimes in a branch of a tree, and laying usually three eggs, oval, white, and very glossy, measuring on an average ·6 by ·5.

Genus **SASIA**, Hodgson, 1836.

This genus of Piculets differs from *Picumnus* in wanting the first (inner hind) toe, and in having a naked space round each orbit, and a very short tail. The culmen is more rounded. The coloration, too, differs greatly from that of *Picumnus*..

Three species are known—one is Himalayan and Burmese, the other two Malay.

1002. **Sasia ochracea.** *The Rufous Piculet.*

Sasia ochracea, *Hodgs. J. A. S. B.* v, p. 778 (1836); *Blyth, Cat.* p. 65; *Horsf. & M. Cat.* ii, p. 678; *Jerdon, B. I.* i, p. 301; *id. Ibis,* 1872, p. 10; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97: xlv, pt. 2, p. 70; *Blyth & Wald. Birds Burm.* p. 78; *Hume & Oates, S. F.* iii, p. 75; *Hume & Dav. S. F.* vi, p. 148; *Hume, Cat.* no. 187; *id. S. F.* xi, p. 65; *Inglis, S. F.* ix, p. 247; *Hargitt, Ibis.* 1881, p. 231; *id. Cat. B. M.* xviii, p. 555; *Oates, B. B.* ii, p. 26: *id. in Hume's N. & E.* 2nd ed. ii, p. 317.

Comeris (Sasia) ochracea, *Hodgs. Gray's Zool. Misc.* p. 85 (1844).

Microcolaptes ochraceus, *Blyth, J. A. S. B.* xiv, p. 191.

Sasya, Nepal; *Chim,* Lepcha.

Coloration. Male. Nasal plumes and forehead golden yellow, the former terminating in long black bristles, the yellow shading into rufous on the sinciput; occiput and nape olive; lores light grey; a white supercilium carried back some distance from above the eye; back, scapulars, and edges of tertiaries rufous olive, remainder of outer surface of wing pure olive; rump bright orange-brown; quills (except the outer edges) brown with whitish inner margins; tertiaries pale brown; upper tail-coverts and tail black; lower parts orange-brown (brownish ferruginous), occasionally brownish yellow, sides of neck and hind neck rather more rufous: wing-lining yellowish white; edge of wing buff.

In the *female* the forehead and sinciput are brownish rufous, like the hind neck.

Upper mandible dark brown, lower plumbeous; iris crimson, orbits dusky red; legs yellowish red (*Oates*).

Length 3·4; tail 1; wing 2·1; tarsus ·55; bill from gape ·55.

Distribution. The Himalayas in Nepal, and further eastward; Assam, Tipperah, Sylhet, Cachar, Manipur, and throughout Burma, but not, so far as is known, farther south, this species being replaced in the Malay Peninsula by *S. abnormis.* In Sikkim *S. ochracea* is found between 1000 and 6000 feet.

Habits, &c. This little Woodpecker is usually solitary or in pairs; it haunts brushwood and bamboos in forest, and, like *Picumnus innominatus*, often makes its presence known by the noise it produces by tapping on bamboos. It lives on various insects, partly, at all events, on Coleoptera. Its eggs have been found in Sikhim by Mr. Gammie, amongst others, in June and July. It makes a hole, sometimes in the stem of a tree, sometimes in a bamboo. The eggs are white and measure about ·63 by ·5.

Subfamily IYNGINÆ.

Tail-feathers soft, flexible; tail about three quarters the length of the wing or more; nostrils not covered by plumes, but partially covered by a membrane.

This subfamily contains the Wrynecks, which form a single genus.

Genus **IYNX**, Linn., 1766.

Bill of moderate length, conical, compressed; nostrils large, near the culmen; wing pointed; plumage soft, brownish grey in colour, minutely speckled. Sexes alike.

Four species are known, three of which are confined to Africa; the fourth is a migratory bird, visiting India and Burma in winter.

1003. **Iynx torquilla.** *The Common Wryneck.*

Yunx torquilla, *Linn. Syst. Nat.* i, p. 172 (1766) *Blyth, J. A. S. B.* xvi, p. 467; *id. Cat.* p. 65; *Horsf. & M. Cat.* ii, p. 679; *Jerdon, B. I.* i, p. 303; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 22; *id. S. F.* ii, p. 461; *Brooks, J. A. S. B.* xli, pt. 2, p. 74; *Butler, S. F.* iii, p. 459; v, p. 227; ix, p. 386; *Ball, S. F.* vii, p. 206; *Hume, Cat.* no. 188; *Barnes, Birds Bom.* p. 120.

Jynx torquilla, *Blyth, Ibis,* 1866, pp. 356, 357.

Iÿnx torquilla, *Biddulph, Ibis,* 1881, p. 49; *Scully, ibid.* p. 430; *Oates, B. B.* ii, p. 23; *Hume, S. F.* xi, p. 65; *Hargitt, Cat. B. M.* xviii, p. 560; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 380; *Oates in Hume's N. & E.* 2nd ed. ii, p. 318; *Sharpe, Yark. Miss., Aves,* p. 110.

Gardan eyengtha, H.; *Meda nulingadu,* Tam.

Coloration. Above brownish grey, finely speckled and mottled: a dark brown patch, unevenly coloured, from nape to middle of back, another across the coverts of each wing, a few longitudinal dark streaks on the lower back and rump, and some imperfect ocelli on the wing-coverts; quills brown, with numerous rufous spots on both webs; tail with narrow wavy black cross-bands; sides of head, throat, and fore neck pale rufous with dark cross-lines, a dark patch on the ear-coverts; breast and abdomen white, with arrow-head-shaped dark marks.

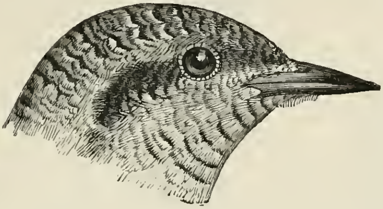

Fig. 21.—Head of *I. torquilla.*

Bill brown, iris hazel; legs and feet greenish brown (*Oates*).

Length 7·5; tail 2·8; wing 3·4; tarsus ·8; bill from gape ·85.

Distribution. A winter vistor to the plains of India and Burma, extending south to Madras (*Jerdon*) and Belgaum (*Butler*), and in Burma to Pegu (*Oates*) and Karennee (*Wardlaw Ramsay*, *Fea*). Not recorded from the Malabar coast, Ceylon, nor Tenasserim. Found in summer in Kashmir and Gilgit. Outside of India the Wryneck is found in summer throughout the greater part of Europe, Central and Northern Asia, and in winter in parts of Africa.

Habits, &c. The Wryneck is generally seen on low trees or bushes or in high grass. It feeds on various insects, chiefly ants, which it sometimes captures on the ground. It has a peculiar plaintive call. It but rarely climbs trees like a Woodpecker, pressing its tail against the bark, though it has been seen to do so. The name is derived from a habit it has of twisting its head round. It has not been known to breed in the plains of India, but Brooks and Stoliczka have found it nesting in Kashmir. The eggs are laid in Europe about May in a hole not always made by the bird, often in a lime-tree. The hole is not lined. The eggs are white, 7 to 12 in number, and measure about ·81 by ·64.

Yunx indica, Gould (Jerdon, B. I. i, p. 304), is now known to have been founded on a specimen of an African species, *I. pectoralis.* The supposed Afghan or Tibetan locality must have been a mistake.

Order IV. ZYGODACTYLI.

The second order of Picarian birds comprises the Indicators or Honey-guides, the Barbets, and the Toucans (*Rhamphastidæ*), the last being peculiar to South America. All of these have zygodactyle feet like Woodpeckers, with the first and fourth toes directed backwards, and the picine arrangement of the deep plantar tendons, the *flexor perforans digitorum* running to the third toe only, whilst the first, second, and fourth toes are supplied by branches of the *flexor longus hallucis*, as shown in the accompanying figure by Garrod. The muscles of the thigh, too, in the present group, present the same arrangement as in *Pici*; the spinal feather-tract is similarly disposed, the oil-gland is tufted, and there are no cæca. The nidification, too, is similar.

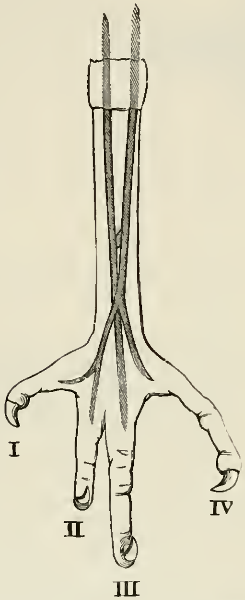

Fig. 22.—Tarsus and foot of *Megalæma asiatica* from behind, dissected to show the deep plantar tendons, the *f. long. hallucis* on the right in the upper part of the figure, the *f. perf. digitorum* on the left. (Garrod, P. Z. S. 1875, p. 346.)

On the other hand, the vomer in the present group, instead of being represented by a number of paired rods, is single and bifurcate, and the palate is either truly desmognathous, the maxillo-palatines blending across the middle line, or ægithognathous. The sternum, too, presents some characteristic differences, being much broader, especially in front, in proportion to its length, and the breadth in front being nearly the same as that behind, instead of much less; the foramina or notches on the posterior border are deeper, the manubrium or rostrum sterni is pointed and not bifid, and the clavicles do not meet to form a furcula. Tongue of ordinary structure, not protrusile.

The two Indian families of this order are thus distinguished (the characters do not apply to some African forms) :—

Tail-feathers 12; primaries 9	**Indicatoridæ.**
Tail-feathers 10; primaries 10	**Capitonidæ.**

Family INDICATORIDÆ.

Bill stout, short. Tail-feathers 12 (except in one aberrant African genus). Wing long and pointed; only 9 primaries; no short primary, the first nearly as long as the second. Ventral feather-tract forked on the throat, but not on each side of the breast.

Ethiopian and Oriental regions. A single genus is found in India.

Genus **INDICATOR**, Vieillot, 1816.

Tarsus short, all toes well-developed, 3rd (outer anterior) longer than 4th (outer posterior). Bill finch-like; culmen rounded, the profile considerably curved; no nasal plumes nor rictal bristles; nostrils large, subtriangular, partly covered by a membrane. Tail somewhat graduated, the outer pair of rectrices in several species, as in the Indian one, considerably shorter and narrower.

This genus contains several African species and the only two Oriental members of the family; one of these is Himalayan, the other, *I. archipelagicus*, is Malayan, not ranging into Tenasserim.

The African Indicators frequently point out the position of bees' nests, and hence have received the name of Honey-guides. Throughout Africa these birds are said to lead men to bees' nests for the sake of sharing in the spoil. Nothing is known of similar habits in the Indian and Malay species, though they appear, like the African, to feed on hymenoptera. The Honey-guides, like Woodpeckers and Barbets, lay white eggs in a hole in the stem or branch of a tree, but they are said to utilize an old nest-hole of a Barbet or Woodpecker for the purpose.

1004. **Indicator xanthonotus.** *The Yellow-backed Honey-guide.*

Indicator xanthonotus, *Blyth, J. A. S. B.* xi, p. 166 (1842); xii, p. 942, pl.; xiv, p. 198; *id. Cat.* p. 65; *Jerdon, Ill. Ind. Orn.* pl. 50; *id. B. I.* i, p. 306; *id. Ibis,* 1872, p. 10; *Hume, S. F.* i, p. 313; *Stoliczka, ibid.* p. 425; *Hume, Cat.* no. 190; *Shelley, Cat. B. M.* xix, p. 3; *Sharpe, Yark. Miss., Aves,* p. 108.

Indicator radcliffi, *Hume, Ibis,* 1870, p. 529; *Jerdon, Ibis,* 1872, p. 10.

Pseudofringilla xanthonotus, *Hume, S. F.* i, p. 314 (1873).

Pseudospiza xanthonota, *Sharpe, Rowley's Orn. Misc.* i, p. 207.

Coloration. Broad forehead, edges of a few sincipital feathers, and cheeks golden yellow; crown and sides of head including area round the eyes, back and sides of neck dusky yellowish olive, feathers of the crown with dark centres; feathers of upper back and scapulars, wing-coverts and quills blackish brown, all except the primaries and their coverts narrowly fringed with yellowish olive;

inner webs of secondaries and tertiaries with whitish margins; middle of back pure yellow, lower back and rump orange-yellow; upper tail-coverts and tail-feathers blackish brown, except the outermost (shorter) tail-feathers, which are paler and greyer; lower parts dark grey; the chin, throat, and fore neck tinged with yellow; breast and abdomen with blackish shaft-streaks, broader behind vent; feathers and under tail-coverts blackish with pale edges; wing-lining whitish, edge of wing buff.

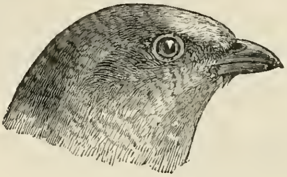

Fig. 23.—Head of *I. xanthonotus*.

Bill yellow, ashy towards the tip; iris dark brown; naked orbital area pale green; feet pale greenish horny (*Stoliczka*).

Length about 6; wing 3·8; tail 2·4; tarsus ·6; bill from gape ·5.

Distribution. This species, which is very rare, has hitherto been found only in the Himalayas, in Sikhim, and also near Murree and Abbottabad, but nowhere in the intervening area.

Habits, &c. The only published observations are by Stoliczka, who shot a male close to Dungagali near Murree. This bird had a heavy flight like *Megalæma*, and in the stomach were several specimens of a predatory wasp and a small quantity of green vegetable matter.

Family CAPITONIDÆ.

Bill as a rule stout and strong. Nostrils at base of bill, often overhung by plumes and bristles. Rictal and chin bristles often largely developed. Ventral feather-tract forked on the throat and on each side of the breast. Tail-feathers 10. Wing rounded in all Indian forms, and with 10 primaries, the first short.

Key to the Genera.

a. No green on plumage; no rictal bristles .. CALORHAMPHUS, p. 83.
b. Prevailing colour green; long rictal bristles.
  a'. Lower tail-coverts red .... MEGALÆMA, p. 84.
  b'. Lower tail-coverts green.
    a''. 2nd primary shorter than 10th.
      a^3. Head, neck, and breast brown, more or less streaked .... THEREICERYX, p. 86.

b^3. Head and neck with bright colours.
  a^4. Culmen longer than tarsus .... CHOTORHEA, p. 90.
  b^4. Culmen not longer than tarsus .. CYANOPS, p. 92.
b''. 2nd primary longer than 8th ...... XANTHOLÆMA, p. 97.

The Barbets are mainly fruit-eating birds. In the stomachs of the African species that I examined in Abyssinia I found insects in considerable quantities; but although some of the Indian species are occasionally insectivorous, none of them, with the exception of *Calorhamphus*, feed much on insect food. Indian species, with the same exception, have a peculiar call of one, two, or three syllables, repeated in a singularly monotonous manner for several minutes, then ceasing for a time, and recommencing after an interval. The calls of two or more birds are frequently heard together, the pitch of each bird's note being different. It is often very difficult to tell in which direction precisely a bird is calling, and both the direction and distance appear to vary as the bird turns its head in different ways. Each bird, in the act of calling, nods its head in a peculiar manner. All Barbets, so far as is known, excavate nest-holes in trees not unlike those made by Woodpeckers; the entrance small, generally very well rounded and neatly bevelled, and the inside larger and well smoothed. The eggs, which are white but not so glossy as those of Woodpeckers, are laid on the bare wood, or on a few chips. When making their nest-holes these birds tap to detach the wood, but the action is much slower than that of Woodpeckers.

As a rule Barbets perch, and they do not, commonly at all events, climb stems or branches as Woodpeckers do, but they sometimes cling to a vertical tree. Their flight is undulating, but strong and moderately rapid.

In the plumage of all Indian species, except *Calorhamphus hayi*, green predominates. The sexes are generally alike.

Genus **CALORHAMPHUS**, Lesson, 1839.

Bill stout, culmen much curved, sharply angulate, upper mandible not swollen at the base; nostrils partly overhung, but not concealed, by feathers and a few bristles; no bristles on chin; feathers of crown with coarse shafts, of which the ends are prolonged as free bristles. Wings rounded, tail slightly rounded. Sexes alike except in the colour of the bill.

A genus of two small dull-coloured species, brown above, whitish below, confined to the Malay countries. One is found in Southern Tenasserim.

1005. **Calorhamphus hayi.** *The Brown Barbet.*

Bucco hayi, *Gray, Zool. Misc.* p. 33 (1831).
Megalorhynchus hayii, *Blyth, Cat.* p. 69; *Horsf. & M. Cat.* ii, p. 648.

Calorhamphus lathami, *Marshall, Mon. Cap.* p. 179, pl. 72; *nec* Bucco lathami, *Gmel.*
Calorhamphus hayii, *Hume, S. F.* iii, p. 319; *id. Cat.* no. 190 bis; *Hume & Dav. S. F.* vi, p. 149; *Oates, B. B.* ii, p. 138; *Shelley, Cat. B. M.* xix, p. 50.

Coloration. Upper parts throughout dark brown, the feathers of the crown with black shafts and narrowly edged with rufous, those of the mantle with narrow yellow edges, which are more conspicuous on the upper tail-coverts; these pale fringes disappear with wear; quills and tail-feathers also dark brown, the quills with fulvous inner margins; sides of head dark brown like the crown, becoming paler and reddish in the malar region; chin and throat still paler rufous, remainder of lower parts sullied yellowish white.

Bill black in the male, dull reddish brown in the female; irides dull red or brownish red; legs and feet orange, claws black (*Davison*).

Length 7·25; tail 2; wing 3·25; tarsus ·85; bill from gape 1·2.

Distribution. From the southernmost part of Tenasserim throughout the Malay Peninsula to Sumatra.

Habits, &c. According to Davison this is a forest bird, usually seen in small parties of three or four, hunting about the branches and leaves of trees, clinging in all positions like a Tit, and feeding on insects as much as fruits. It has a most peculiar note, a low soft whistle.

Genus **MEGALÆMA**, G. R. Gray, 1842.

Bill large, culmen rounded, not angulate, much curved, upper mandible considerably swollen at the base and overlapping the lower; nostrils completely covered by plumes and bristles, base of bill surrounded by bristles not so long as the bill; wings rounded; tail square. Sexes alike.

This genus as restricted comprises three species of large size, two of which are found within our area; the third, *M. lagrandieri*, occurs in Cochin China. The prevailing colour is green. The under tail-coverts are bright red.

Key to the Species.

Head and neck deep violet-blue	*M. marshallorum*, p. 84.
Head and neck verditer with a greenish tinge.	*M. virens*, p. 86.

1006. **Megalæma marshallorum.** *The Great Himalayan Barbet.*

Megalaima virens, *Blyth, Cat.* p. 66; *Horsf. & M. Cat.* ii, p. 635; *Jerdon, B. I.* i, p. 308; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 22; *Beavan, Ibis,* 1869, p. 415; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; *Marshall, Mon. Cap.* p. 33, pl. xvi.; *nec* Bucco virens, *Bodd.*
Megalæma marshallorum, *Swinhoe, A. M. N. H.* (4) vi, p. 348 (1870); *Jerdon, Ibis,* 1872, p. 11; *Cock & Marsh. S. F.* i, p. 350;

Blyth, Birds Burm. p. 73; *Brooks, S. F.* iii, p. 232; *Hume, Cat.* no. 191; *id. S. F.* xi, p. 66; *Scully, S. F.* viii, p. 250; *C. H. T. Marshall, Ibis,* 1884, p. 410; *Oates in Hume's N. & E.* 2nd ed. ii, p. 318; *Shelley, Cat. B. M.* xix, p. 53; *Sharpe, Yark. Miss., Aves,* p. 108.

Traiho, H. Chamba; *Miouli,* at Mussooree; *Nyahul, Neoul,* Nepalese; *Kun-nyong,* Lepcha.

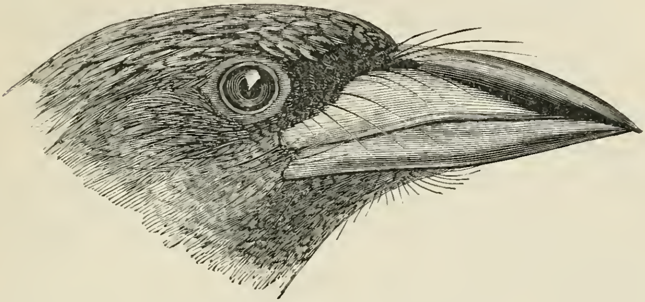

Fig. 24.—Head of *M. marshallorum.*

Coloration. Feathers of head and neck all round black with deep violet-blue edges; back and scapulars brownish olive, the upper back with narrow pale green or greenish-yellow longitudinal streaks; lower back, rump, and upper tail-coverts grass-green, with brighter green edges; tail green above, blackish washed with pale blue below; secondary-coverts like back; primary-coverts and primaries near the base fringed with blue, outer webs of secondaries green, tertiaries bluer with the tips olive-brown, remainder of quills blackish brown, inner webs with yellowish-white margins, and outer webs of primaries with a pale linear border near the tips; upper breast dark olive-brown; lower breast and abdomen blue in the middle, yellow with broad brownish shaft-stripes at the sides; under tail-coverts scarlet.

Bill yellow, pale in front, dusky at the edge of the upper mandible; irides brown; legs greenish horny (*Jerdon*).

Length 13; tail 4; wing 5·7; tarsus 1·25; bill from gape 2·1.

Distribution. Throughout the Himalayas as far west as Murree, between about 3000 and 8000 feet elevation, also south of the Assam Valley in Manipur, the Khási hills, and, according to Blyth, Arrakan. Birds from Karennee referred to this species by Wardlaw Ramsay prove to belong to the next.

Habits, &c. A forest bird; according to Jerdon, "it has a loud plaintive call (*pi-o, pi-o*), keeps to the top of high trees, lives entirely on fruit, and has a strong and vigorous flight in great undulations." It sometimes is met with in small flocks. It makes nest-holes in various trees, in the trunks and larger branches, from 10 to 50 feet from the ground, and lays from the middle of May to the middle of July. The eggs are dull white, usually four in number, and measure on an average 1·37 by ·98.

1007. **Megalæma virens.** *The Great Chinese Barbet.*

Bucco virens, *Bodd. Tabl. Pl. Enl.* p. 53 (1783).
Megalæma virens, *Hume, S. F.* ii, p. 472; *id. Cat.* no. 191 bis; *Hume & Dav. S. F.* vi, p. 150; *Bingham, S. F.* ix, pp. 165, 473; *Oates, B. B.* ii, p. 130; *id. in Hume's N. & E.* 2nd ed. ii, p. 319; *Shelley, Cat. B. M.* xix, p. 52; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 377.
Megalæma marshallorum, *Walden, Birds Burm.* p. 73; *Wardl. Rams. Ibis,* 1877, p. 457; *Oates, B. B.* ii, p. 129; *nec Swinhoe.*

Similar to *M. marshallorum*, except that the colour of the head and neck is verditer-blue with a greenish tinge, and that the pale streaks on the upper back are much fewer, less marked, and whitish or bluish, not green or yellow; the median wing-coverts too are tinged with red. Soft parts and dimensions as in *M. marshallorum*.

Distribution. Karennee and hill-forests of northern Tenasserim as far south as Muleyit, east of Moulmein, extending thence into South China.

Habits, &c. Similar to those of *M. marshallorum*. The eggs were found by Major Bingham in Tenasserim during February and March.

Genus **THEREICERYX**, Blanford, 1893.

Bill shaped somewhat as in *Megalæma*, but the upper mandible is not quite so high, and the bill is generally pale yellowish throughout. Nostrils exposed. Wing rounded. The plumage is peculiar; the head, neck, and breast are brown, more or less streaked with white, the rest of the plumage green.

Three species are found within Indian limits, a fourth, *T. phæostictus* (*phæostriatus*), inhabits Cochin China. The members of this small group have hitherto been referred by various writers either to *Megalæma* or to *Cyanops*.

Key to the Species.

a. A large naked orbital space extending to gape .	*T. zeylonicus*, p. 86.
b. Orbital space smaller, not extending to gape.	
a'. Wing about 5″	*T. lineatus*, p. 88.
b'. Wing about 4″	*T. viridis*, p. 89.

1008. **Thereiceryx zeylonicus.** *The Common Indian Green Barbet.*

Bucco zeylanicus, *Gmel. Syst. Nat.* i, p. 408 (1788); *Blyth, J. A. S. B.* xv, pp. 13, 282.
Bucco caniceps, *Franklin, P. Z. S.* 1831, p. 121.

Megalaima caniceps, *Blyth, Cat.* p. 66; *Layard, A. M. N. H.* (2) xiii, p. 446; *Horsf. & M. Cat.* ii, p. 637; *Jerdon, B. I.* i, p. 310.
Megalaima zeylanica, *Horsf. & M. Cat.* ii, p. 638; *Holdsworth, P. Z. S.* 1872, p. 429.
Megalæma caniceps, *Beavan, Ibis,* 1865, p. 411; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 22; *Marshall, Mon. Cap.* p. 91, pl. 39; *McMaster, J. A. S. B.* xl, pt. 2, p. 209; *Ball, S. F.* ii, p. 392; v, p. 413; vii, p. 206; *Morgan, Ibis,* 1875, p. 314; *Hume, Cat.* no. 193; *Reid, S. F.* x, p. 25; *Barnes, Birds Bom.* p. 121.
Megalæma zeylanica, *Blyth, Ibis,* 1867, p. 296; *Marshall, Mon. Cap.* p. 95, pl. 40; *Hume, S. F.* vii, p. 369; *id. Cat.* no. 193 ter; *Legge, Birds Ceyl.* p. 208, pl. x.
Megalæma inornata, *Walden, A. M. N. H.* (4) v, p. 219 (1870); *Marshall, Mon. Cap.* p. 89, pl. 38; *Jerdon, Ibis,* 1872, p. 11; *Hume, S. F.* iii, p. 401; *id. Cat.* no. 193 bis; *Butler, S. F.* iii, p. 459; ix, p. 387; *Vidal, S. F.* ix, p. 54; *Davidson, S. F.* x, p. 298; *Littledale, Jour. Bomb. N. H. Soc.* i, p. 197; *Barnes, Birds Bom.* p. 121.
Cyanops caniceps *and* C. zeylonica, *Oates in Hume's N. & E.* 2nd ed. ii, pp. 322, 324; *Shelley, Cat. B. M.* xix, pp. 76, 78.
Thereiceryx zeylonicus, *Blanf. Ibis,* 1893, p. 237.

The common Green Barbet, Jerdon; *Barra Bussunta,* H. & Beng.; *Kutumra,* Deccan; *Kudrunga,* H. in Central India; *Kotur,* H. (Rohilcund and Doab) & Mahr.; *Sunterar,* Beng. Manbhoom; *Kuturga,* Mahr.; *Kutur haki,* Can.; *Gandu Karnam,* Tel.; *Kotoruwa,* Cing.; *Kutur,* Tamil (Ceylon).

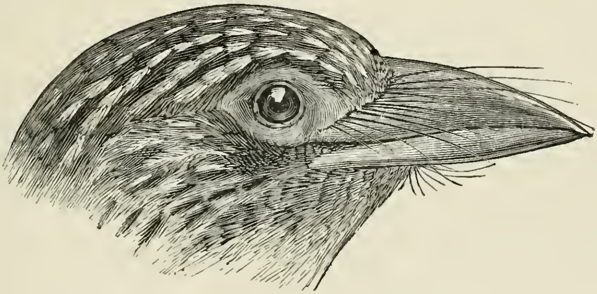

Fig. 25.—Head of *T. zeylonicus.*

A large naked space round the eye extending to the gape, lores almost entirely naked. Culmen much curved.

Coloration. Head and neck all round, with the breast, and sometimes the upper abdomen, brown, the feathers with narrow pale shaft-stripes, the pale shafts generally inconspicuous on the head, but becoming more and more distinct behind; upper parts from neck bright green; interscapulary feathers, scapulars, and upper wing-coverts more or less distinctly pale-shafted with small terminal whitish spots. Abdomen paler green than back; tail below washed with light verditer-blue; quills brown, with pale inner margins and the primaries narrowly pale-edged near the end.

Bill pale orange-brown; iris red-brown; bare orbital skin dull orange; legs light yellowish brown (*Jerdon*).

Length 10·5; tail 3·2; wing 4·7; tarsus 1·25; bill from gape 1·8. Ceylon and Tranvancore birds run smaller, wing about 4·4.

Distribution. Almost throughout India and Ceylon. Common at the base of the Western Himalayas in the Dehra Dún and Rohilcund Terai, throughout the North-west Provinces and the wooded parts of Central India, Eastern Guzerat, the Central Provinces, and South-western Bengal, the forest-tracts between the Ganges and Godávari, some of the better wooded regions of the Madras Presidency, and near the Malabar coast; wanting in the Punjab and Sind, in Rajputana except around Mount Abu, in Lower Bengal, and, I believe, in the open parts of the Deccan and Carnatic. In Ceylon this Barbet inhabits most of the low country and the lower hills, except close to the sea-shore, or in dense damp forest.

As in so many other cases, the Southern bird from Ceylon and Travancore is rather smaller and darker. This is typical *T. zeylonicus.* The North Indian bird *caniceps* is larger and slightly paler. The intermediate form from the Bombay coast has been separated as *inornata.* I can discover no constant distinction: some freshly moulted northern forms are quite as dark in colour as Ceylonese, and in the British Museum collection there is a female Ceylon skin with the wing 4·6 long, and a female Allahabad specimen with the wing measuring 4·5, both being adult and thoroughly good specimens.

Habits, &c. Like other Indian Barbets, this species lives chiefly upon fruit and seeds, and especially on the figs of the banyan and other kinds of *Ficus.* It is said, however, occasionally though rarely to eat insects, and Layard has related how an individual, kept in captivity, killed and swallowed small birds (Munias), its fellow-captives. The best known characteristic of this Barbet is its loud dissyllabic call, which Jerdon represents as *kútúr, kotúr kotúr,* preceded by a harsh sort of laugh; this call is heard from January or February till June. Each bird continues to call for some time, frequently even on moonlight nights. The flight is strong but heavy and somewhat undulating. In Northern India the breeding-season is chiefly in March and April; 3 or 4 eggs are laid in a hole hollowed by the bird itself in a tree. The eggs are dull white, slightly glossy, and measure about 1·21 by ·88.

1009. **Thereiceryx lineatus.** *The Lineated Barbet.*

Capito lineatus, *Vieill. Nouv. Dict. d'Hist. Nat.* iv, p. 500 (1816).
Megalaima lineata, *Blyth, Cat.* p. 66; *Horsf. & M. Cat.* ii, p. 636; *Jerdon, B. I.* i, p. 309.
Megalaima hodgsoni, *Bonap. Consp. Av.* i, p. 144 (1850).
Megalaima macclellandi, *Moore, Horsf. & M. Cat.* ii, p. 637.
Megalæma hodgsoni, *Blyth, Ibis,* 1866, p. 358; *Walden, P. Z. S.* 1866, p. 540; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 22; *Marshall,*

Mon. Cap. p. 85, pl. 36; *Hume, S. F.* iii, p. 75; *id. Cat.* no. 192; *Blyth & Wald. Birds Burm.* p. 73; *Hume & Dav. S. F.* vi, p. 151; *Anders. Yunnan Exped., Aves*, p. 583; *Scully, S. F.* viii, p. 251; *Salvadori, Ann. Mus. Civ.* (2) iv, p. 577; v, p. 561; *Hume, S. F.* xi, p. 67.
Megalæma lineata, *Marshall, Mon. Cap.* p. 88, pl. 37.
Cyanops hodgsoni, *Oates, B. B.* ii, p. 132.
Cyanops lineata, *Oates in Hume's N. & E.* 2nd ed. ii, p. 325; *Shelley, Cat. B. M.* xix, p. 80.

Dang kun-nyong, Lepcha; *Kudurta, Khotoor*, Nepal; *Pho-goung*, Burmese.

Naked space round eye much smaller than in *T. zeylonicus* and not extending to gape.

Coloration. Crown and nape brown, with rather broad white shaft-stripes; upper plumage from the neck grass-green; feathers of the upper back with narrow white shafts; lores and cheeks whitish; ear-coverts whity brown; chin and throat white; sides of neck, breast, and upper abdomen coloured like the crown, but the white shaft-stripes on the breast are much broader; lower abdomen and under tail-coverts light green, the feathers with broad whitish median stripes; quills dark brown, with pale yellow inner margins; primaries with pale outer borders near the tips; tail washed with light blue below.

Bill horny yellow; orbits deep yellow; irides brown; feet fleshy yellow (*Scully*).

Length 11; tail 3·3; wing 5·1; tarsus 1·25; bill from gape 1·7. These are the dimensions of Eastern Himalayan and Burmese birds; Western Himalayan are larger, Malay specimens smaller.

Distribution. Throughout the Lower Himalayas as far west as the Sutlej, not ascending more than 2000 or 3000 feet, and eastward to Yunnan; also in Assam, and to the southward throughout Burma, in Siam and Cambodia, and in Java, but not in the Malay Peninsula nor in Sumatra.

The original *T. lineatus* is the Javan race, which is small (wing about 4·6), whilst the big West Himalayan race (wing 5·3) has been distinguished as *Megalæma hodgsoni*; but, as Shelley has shown, the Eastern Himalayan, Assamese, and Burmese birds are intermediate in size. The case is similar to that of *T. zeylonicus* and *T. caniceps*, the Southern race being smaller and darker, but the distinction in size between *T. lineatus* and *T. hodgsoni* is much greater.

Habits, &c. Similar to those of *T. zeylonicus.* The call is a monotonous dissyllabic note. The eggs, four in number, are laid in March and April, and measure about 1·27 by ·87.

1010. **Thereiceryx viridis.** *The Small Green Barbet.*

Bucco viridis, *Bodd. Tabl. Pl. Enl.* p. 53 (1783); *Jerdon, Madr. Jour. L. S.* xi, p. 217; xiii, pt. 2, p. 139; *id. Ill. Ind. Orn.* pl. xxvi; *Blyth, J. A. S. B.* xv, p. 13.

Megalaima viridis, *Blyth, Cat.* p. 67; *Horsf. & M. Cat.* ii, p. 639; *Jerdon, B. I.* i, p. 311; *Davidson, S. F.* x, p. 298; *Barnes, Birds Bom.* p. 122.
Megalæma viridis, *Marshall, Mon. Cap.* p. 81, pl. 35; *Morgan, Ibis,* 1875, p. 315; *Fairbank, S. F.* iv, p. 255; v, p. 396; *Hume & Bourdillon, S. F.* iv, p. 391; *Hume, Cat.* no. 194; *Vidal, S. F.* ix, p. 54; *Butler, S. F.* ix, p. 387; *Davison, S. F.* x, p. 358; *Macgregor, ibid.* p. 437; *Taylor, ibid.* p. 458.
Megalæma sykesi, *Hayes Lloyd, Ibis,* 1873, p. 125.
Cyanops viridis, *Shelley, Cat. B. M.* xix, p. 83; *Oates in Hume's N. & E.* 2nd ed. ii, p. 325.

Naked space round eye much smaller than in *T. zeylonicus*; area above the gape feathered.

Coloration. Head above and nape dark brown not striated; hind neck greener, the feathers pale-shafted; sides of neck brown, with pale shaft-stripes; upper plumage from neck bright grass-green; sides of head, chin, and throat whitish, except the lores, a band running back from the eye, and a narrower rather broken malar stripe, which are dark brown; breast whitish, the feathers with dark-brown edges; abdomen and under tail-coverts pale green; quills blackish brown, with pale buff inner margins; primaries pale-edged outside near tips; lower surface of tail washed with pale verditer-green.

Bill pale horny brown; irides red-brown; orbital skin brown; legs plumbeous brown (*Jerdon*); orbital skin dusky slate; legs greenish plumbeous (*Butler*).

Length 9; tail 2·6; wing 4; tarsus 1·05; bill from gape 1·5. Specimens from the North (*Megalæma sykesii*) average slightly larger than those from Travancore.

Distribution. The Sahyádri and other ranges of hills near the Malabar coast from the Tapti to Cape Comorin. This bird is found up to the tops of the Nilgiris and Palnis.

Habits, &c. Very similar to those of *T. zeylonicus* and *T. lineatus.* Davison says this bird clings like a Woodpecker and taps (probably only when cutting its nest-hole). The call is less loud than that of *T. zeylonicus* but similar. *T. viridis* breeds from February to May, laying three or four eggs in a retort-shaped nest-hole; the eggs are white, only moderately glossy, and measure about 1·13 by ·86.

Genus **CHOTORHEA**, Bonap., 1854.

To this genus belong six Malay Barbets distinguished as a rule by brilliant coloration about the head and by having a black, somewhat elongate, but not high bill, the length of which is more than twice the height. The culmen is considerably curved and much exceeds the tarsus in length. The wing is rounded. Nostrils exposed. A single species extends into Tenasserim. This has been included by Shelley in *Cyanops*, but I agree with Salvadori and Oates in referring it to the present genus.

1011. **Chotorhea mystacophanes.** *The Gaudy Barbet.*

Bucco mystacophanos, *Temm. Pl. Col.* iii, pl. 315 (1824).
Bucco quadricolor, *Eyton, P. Z. S.* 1839, p. 105.
Megalaima quadricolor, *Blyth, Cat.* p. 67.
Chotorea mystacophanus, *Horsf. & M. Cat.* ii, p. 641; *Salvadori, Ucc. Born.* p. 34, pl. i; *Oates, B. B.* ii, p. 130.
Megalæma mystacophanes, *Marshall, Mon. Cap.* p. 41, pl. 19; *Hume, S. F.* ii, p. 472; *id. Cat.* no. 196 quat.; *Walden in Blyth's Birds Burm.* p. 74; *Hume & Dav. S. F.* vi, pp. 152, 502.
Cyanops mystacophanes, *Shelley, Cat. B. M.* xix, p. 72.

Coloration. Male. Broad forehead golden yellow; vertex and occiput, the latter narrowing behind, crimson, sometimes verging on scarlet; lores, chin, throat, and a patch on each side of the fore neck the same; a black supercilium from the lores, much broader behind the eye; a few feathers between the black supercilium and yellow forehead, as also the sides of the face below the eye, and the fore neck verditer-blue; a yellow malar spot on each side at the base of the lower mandible; a bluish tinge on the cheeks farther back; wing-feathers, except on the outer surface above, brown with pale yellow inner borders; under wing-coverts also yellowish; some primaries pale-edged outside near the ends; under surface of tail washed with blue; all the rest of the plumage grass-green, duller and sometimes yellower below; ear-coverts and sides of neck with a yellowish tinge; feathers of hind neck and sides of neck with brighter edges.

Adult *females* are said to resemble males, but if so, they appear very rarely to attain the adult plumage, only one out of 18 sexed female skins in the British Museum having the coloration of the adult male. In young males and in females generally the black eyebrow is absent, the forehead is bluish green, and the chin and throat are first green, then yellow. The scarlet patch on the hind crown is present from a rather early period. The change from the livery of the young to full plumage is very irregular in different individuals, the same region not always acquiring the adult coloration first. Salvadori has already questioned the assumption of the adult male plumage by females of this species.

Bill black (pale beneath in young birds); irides deep brown; orbital skin dark greenish or greyish brown; legs and feet very pale bluish or horny green.

Length 9·25; tail 2·3; wing 3·9; tarsus 1; bill from gape 1·75.

Distribution. The Malay Peninsula, Sumatra, and Borneo, extending into the southern half of Tenasserim as far as the Henza basin north of Tavoy.

Habits, &c. This Barbet is chiefly found in evergreen forests, and is very noisy, incessantly uttering its trisyllabic cry, especially in the evening after dusk, and sometimes on moonlight nights. Davison, who furnishes the preceding notes, adds that he has frequently seen this bird clinging to the stem of a tree and tapping like a Woodpecker.

Genus **CYANOPS**, Bonap., 1854.

Except the form of the bill, which is much shorter, with a less curved culmen, there is but little to distinguish this genus from the last. The culmen is not longer than the tarsus, or if longer, then very slightly so. The wing is much rounded, the 2nd primary being shorter than any other primary except the 1st, and the 3rd shorter than the 4th. The plumage is chiefly green, the head and neck being decorated with patches of bright colour, red, yellow, or blue.

Twelve species are known, distributed over the Oriental region; of these seven occur within Indian limits.

Key to the Species.

a. Chin and throat blue or bluish green.	
a′. Crown red; a black band across vertex	*C. asiatica*, p. 92.
b′. Crown red; a blue band across vertex	*C. davisoni*, p. 93.
c′. Crown bluish green; narrow frontal band crimson	*C. incognita*, p. 94.
d′. Forehead and sinciput golden yellow; occiput green	*C. flavifrons*, p. 94.
e′. Sinciput black; occiput blue	*C. cyanotis*, p. 95.
b. Chin and throat yellow and grey.	
f′. Supercilium black	*C. franklini*, p. 96.
g′. Supercilium mixed black and grey	*C. ramsayi*, p. 97.

1012. **Cyanops asiatica.** *The Blue-throated Barbet.*

Trogon asiaticus, *Lath. Ind. Orn.* i, p. 201 (1790).
Megalaima asiatica, *Blyth, Cat.* p. 67.
Cyanops asiatica, *Bonap. Consp. Volucr. Zygod.* p. 12; *Horsf. & M. Cat.* ii, p. 641; *Jerd. B. I.* i, p. 313; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 98; xliii, pt. 2, p. 176; xlv, pt. 2, p. 70; *Hume & Oates, S. F.* iii, p. 77; *Oates, B. B.* ii, p. 133; *id. in Hume's N. & E.* 2nd ed. ii, p 320; *Shelley, Cat. B. M.* xix, p. 62.
Megalæma asiatica, *Marshall, Mon. Cap.* p. 63, pl. 29; *Blyth & Wald. Birds Burm.* p. 73; *Inglis, S. F.* v, p. 27; *Wardl.-Rams. Ibis,* 1877, p. 457; *Anders. Yunnan Exped., Aves,* p. 584; *Hume & Dav. S. F.* vi, p. 151; *Hume, Cat.* no. 195; *Scully, S. F.* viii, p. 252; *C. H. T. Marshall, Ibis,* 1884, p. 410; *Hume, S. F.* xi, p. 67; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 377; *Hartert, J. f. O.* 1889, p. 429.

Burra bussunt bairi, Burra benebo, Beng.; *Corul,* Mussalmans in Bengal; *Kat-tak,* Lepcha; *Rúturki, Bussanta,* Nep.; *Hútúruru,* Chamba; *Kok-kha-loung,* Burmese.

Coloration. Nasal plumes black; a broad black band, with a yellow anterior border, across the vertex; anterior lores, forehead, and remainder of crown crimson, the occiput bordered with black on each side; remainder of upper surface grass-green; sides of the head, extending all round the eye, chin, throat, and fore neck pale verditer-blue, a large crimson spot on each side of the fore neck, and a small crimson speck at each base of the lower mandible; rest of lower parts yellowish green; tail-feathers washed beneath with pale blue; quills blackish brown, their inner border and the wing-lining yellowish white; a narrow whitish line on the outer web of several primaries near the tip. In the young the colours of the head are indistinct. Males from the Cachar hills are said to have the mantle-feathers and upper tail-coverts tipped with maroon and the under tail-coverts splashed with vermilion.

Bill greenish yellow horny, black above; margins of eyelids orange; irides hazel-brown, brown, and reddish brown; feet dingy green, claws horny black (*Scully*).

Length about 9·2; tail 2·7; wing 4·1; tarsus 1·05; bill from gape 1·4.

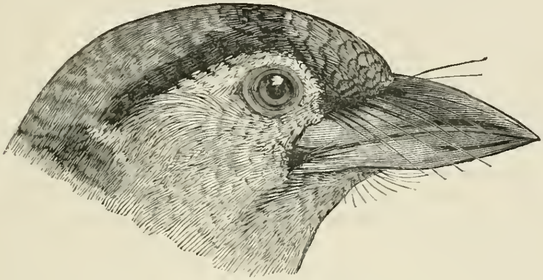

Fig. 26.—Head of *C. asiatica.*

Distribution. Common throughout the Lower Himalayas and sub-Himalayan forests up to 3500 or 4000 feet as far west as Chamba, also in Lower Bengal, Assam, and the neighbouring countries as far as the Khakyen hills in Yunnan to the eastward, and south to Burma. This Barbet has been found by Oates in the Arrakan and Pegu hills, by Wardlaw-Ramsay in Karennee, and by Davison in Northern Tenasserim about Pahpoon.

Habits, &c. A noisy, active bird, living on fruit, and having a peculiar frequently-repeated trisyllabic call. It breeds in the Himalayas in April and May, and generally lays three eggs in a hole, which it excavates in the trunk or a branch of a tree. As a rule there is no lining, but in a very few instances a pad of vegetable fibres or some other substance has been found. The eggs are white, with little or no gloss, and measure about 1·09 by ·83.

1013. **Cyanops davisoni.** *Davison's Blue-throated Barbet.*

Megalæma davisoni, *Hume, S. F.* v, p. 108 (1877); *id. Cat.* no. 195 bis; *Hume & Dav. S. F.* vi, p. 151; *Bingham, S. F.* ix, p. 165; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 562.

Cyanops davisoni, *Oates, B. B.* ii, p. 134; *id. in Hume's N. & E.* 2nd ed. ii, p. 321; *Shelley, Cat. B. M.* xix, p. 65, pl. iv. fig. 1.

This species only differs from *C. asiatica* in smaller size, in having the band across the vertex verditer-blue instead of black, and with a blue line from the vertical band between the crimson of the occiput and a black stripe that extends from above the blue supercilium to over the ear-coverts.

Length 8·5 ; tail 2·5 ; wing 3·9 ; tarsus 1·05 ; bill from gape 1·3.

Distribution. Hitherto only found in Tenasserim about the base of the main range of hills east and south-east of Moulmein.

Habits, &c. Precisely similar to those of *C. asiatica.* The eggs were obtained by Major Bingham in March on two occasions. In each case two white, rather glossy eggs were found, measuring on an average 1·11 by ·8.

1014. **Cyanops incognita.** *Hume's Blue-throated Barbet.*

Megalaima incognita, *Hume, S. F.* ii, pp. 442, 472, 486; *id. Cat.* no. 195 ter; *Wald. in Blyth's Birds Burm.* p. 74; *Hume & Dav. S. F.* vi, pp. 151, 501; *Bingham, S. F.* viii, p. 194; ix, p. 166.
Cyanops incognita, *Oates, B. B.* ii, p. 134; *Shelley, Cat. B. M.* xix, p. 68, pl. iv, fig. 3; *Sharpe, Yark. Miss., Aves,* p. 152, pl. xxiv.

Coloration. Lores, a narrow frontal band, a nuchal patch, and a spot on each side of the fore neck crimson; upper surface grass-green; feathers of crown with pale bluish-green edges; quills blackish brown, the inner borders and the wing-lining yellow, several primaries with a narrow pale outer border near the tip; sides of head bluish green, a line of very small bright yellow feathers on the upper and lower eyelids, above these a black supercilium continued back above the ear-coverts, another black streak from the gape; lower surface pale green, tinged with pale verditer-blue on the malar region, chin, and throat; lower surface of tail dusky, washed with pale blue.

Upper mandible and tip of lower dusky horny, remainder of bill paler; eyelids the same; irides nut-brown; legs and feet grass-green (*Davison*).

Length about 8·8; tail 2·3; wing 3·9; tarsus ·95; bill from gape 1·4.

Distribution. Tenasserim from near Amherst and Myawadee on the north to Tavoy in the south. Rare and local.

Habits, &c. Similar to those of *C. asiatica.*

1015. **Cyanops flavifrons.** *The Yellow-fronted Barbet.*

Bucco flavifrons, *Cuvier, Règne An.* i, p. 428, note, *ex Levaill.* (1817).
Megalæma flavifrons, *Blyth, Cat.* p. 67; *Layard, A. M. N. H.* (2) xiii, p. 447 (1854); *Marshall, Mon. Cap.* p. 69, pl. 30; *Holdsworth, P. Z. S.* 1872, p. 429; *Hume, S. F.* vii, p. 370; *id. Cat.* no. 196 ter; *Legge, Birds Ceyl.* p. 212, pl. x.
Cyanops flavifrons, *Blyth, Ibis,* 1867, p. 297; *Shelley, Cat. B. M.* xix, p. 65; *Oates in Hume's N. & E.* 2nd ed. ii, p. 321.

Coloration. Broad forehead and a spot at each base of the lower mandible golden yellow; whole upper plumage dark grass-green, the coronal feathers tipped with gold, and those of the occiput and back and sides of the neck with whitish shaft-stripes; quills blackish brown, their inner margins and the wing-lining pale yellow; several primaries with a narrow pale outer border near the tip; lores, supercilia, sides of head below eye, ear-coverts, chin, and throat verditer-blue; remainder of lower surface of body pale green, the breast-feathers with well-marked emerald-green borders; abdomen and flanks tinged with emerald-green; lower surface of tail-feathers blackish washed with pale verditer-blue.

Bill greenish horny, dusky at base of culmen; iris light red; tarsi and feet sickly green, the tarsi in some bluish (*Legge*).

Length 8·5; tail 2·3; wing 3·6; tarsus ·95; bill from gape 1·2.

Distribution. Ceylon, chiefly in the hill-forests of the Kandyan province up to about 6400 feet, but found also locally in the low plains.

Habits, &c. Very similar to those of other Barbets. This is an active, noisy, fruit-eating bird, with a peculiar monotonous call, monosyllabic according to Legge, who adds that this species makes a nest-hole usually in a soft-wood tree, such as the cotton-tree (*Bombax*), and lays two or three smooth white eggs, measuring on an average 1·11 by ·81. It has apparently two broods in the year, the breeding-season lasting from February to September.

1016. **Cyanops cyanotis.** *The Blue-eared Barbet.*

Bucco cyanotis, *Blyth, J. A. S. B.* xvi, p. 465 (1847).

Megalæma cyanotis, *Marshall, Mon. Cap.* p. 77, pl. 33. fig. 3; *Blyth & Wald. Birds Burm.* p. 74; *Inglis, S. F.* v, p. 27; *Hume & Dav. S. F.* vi, pp. 155, 502; *Hume, Cat.* no. 198 ter; *Bingham, S. F.* ix, p. 166; *Hume, S. F.* xi, p. 69; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 564; vii, p. 378.

Cyanops cyanotis, *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 98; *Jerdon, Ibis,* 1872, p. 11.

Xantholæma cyanotis, *Hume, S. F.* iii, p. 77; *Oates, B. B.* ii, p. 137.

Mesobucco cyanotis, *Shelley, Cat. B. M.* xix, p. 87; *Oates in Hume's N. & E.* 2nd ed. ii, p. 328.

Nyet-pa-din, Arrakan.

Size small, rictal bristles extending beyond end of bill.

Coloration. Feathers above nostrils white at base, those of lores and forehead black, all fringed with pale blue; sinciput black; occiput cobalt-blue; ear-coverts, chin, and throat light verditer-blue, area below eye bright red, the feathers white at the base; a crimson patch above and another below the ear-coverts; a black malar stripe; remainder of upper and lower plumage bright grass-green except the bend of the wing, which is more or less blue, and the quills, which are blackish brown with whitish inner margins; the tail-feathers are sometimes bluish green above with brighter edges, and always washed with verditer below.

Young birds are green throughout. In nearly adult specimens the black sincipital feathers are tipped with blue.

Bill black; base of lower mandible slightly tinged reddish horny; irides very dark brown; legs and feet dirty green; claws bluish black (*Davison*).

Length about 6·5; tail 2·2; wing 3·25; tarsus ·8; bill from gape 1. Tenasserim birds are a little smaller.

Distribution. Eastern Himalayas (Sikhim), Assam, and hills to the south, and throughout Burma. An allied but distinct species, *C. duvaucli*, inhabits the Malay Peninsula, Sumatra, and Borneo.

Habits, &c. This is chiefly a bird of dense evergreen hill forest, and is usually seen on high trees. The note is peculiar, of two syllables, harsh and metallic. The eggs have been found in Tenasserim by Major Bingham in February and by Mr. Darling in April, two or three in number, white, and measuring about ·93 by ·67.

In size, coloration, and long rictal bristles this species approaches *Xantholæma*, but it has a rounded wing.

1017. **Cyanops franklini.** *The Golden-throated Barbet.*

Bucco franklinii, *Blyth, J. A. S. B.* xi, p. 167 (1842).
Bucco igniceps, *Hodgson, Gray's Zool. Misc.* p. 85 (1844), descr. nulla.
Megalæma franklini, *Blyth, Cat.* p. 68; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 70; *Marshall, Mon. Cap.* p. 51, pl. 24; *Hume, Cat.* no. 196; *id. S. F.* xi, p. 68; *Scully, S. F.* viii, p. 252.
Cyanops franklinii, *Horsf. & M. Cat.* ii, p. 643; *Jerdon, B. I.* i, p. 314; *id. Ibis,* 1872, p. 11; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 98; *Shelley, Cat. B. M.* xix, p. 69; *Oates in Hume's N. & E.* 2nd ed. ii, p. 322.

Ban-basi, *Bágh-basi*, Nepal.

Coloration, Forehead and a patch in the middle of the occiput crimson; vertex golden yellow; lores and area above and below the eye, with the sides of the crown growing broader behind, black; a bluish collar behind the black; back, scapulars, and rump grass-green; outer surface of wing the same near the back, passing into deep blue on the primary-coverts near the carpus; many of the coverts and the outer primaries near the base with pale or bluish-green edges; secondaries with green edges; wing-feathers except on outer edges blackish brown, with pale yellow inner borders, wing-lining the same; tail green above, washed with pale blue below; ear-coverts, malar region below them, and a broad connecting band across the throat pale silvery whity-brown; an orange spot at each base of the lower mandible; chin and upper throat golden yellow; lower parts from throat green or yellowish green.

Bill blackish, plumbeous beneath; irides brown; orbital skin plumbeous; legs greenish slaty (*Jerdon*).

Length about 9; tail 2·6; wing 4; tarsus ·95; bill from gape 1·3.

Distribution. The Eastern Himalayas as far west as Nepal, also the hills south of the Assam Valley (Khási, Nága, Manipur), between 3000 or 4000 and about 8000 feet.

Habits, &c. This Barbet also is said to feed entirely on fruit. It has a call which sounds dissyllabic at a distance, but is said by Hume to consist of three successive sounds, the first being lower in pitch and having less resonance. The eggs, 3 or 4 in number, and pure white, are laid, according to Hodgson, in April, but one was obtained by Mandelli in August. They are deposited in a hole bored in a tree as usual, and measure about 1·1 by ·85.

1018. **Cyanops ramsayi.** *Ramsay's Golden-throated Barbet.*

Megalæma ramsayi, *Walden, A. M. N. H.* (4) xv, p. 400 (1875); *id. in Blyth's Birds Burm.* p. 74; *Hume, S. F.* iii, p. 402; *id. Cat.* no. 196 bis; *Hume & Dav. S. F.* vi, p. 152; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 561; vii, p. 377.

Megalaima franklinii, *apud Blyth, J. A. S. B.* xxiv, p. 277; *id. Birds Burm.* p. 74.

Cyanops ramsayi, *Oates, B. B.* ii, p. 135; *Sharpe, P. Z. S.* 1887, p. 442; *Shelley, Cat. B. M.* xix, p. 70, pl. iv, fig. 2.

This species only differs from *C. franklini* in having the area above the eye and on the sides of the crown above the ear-coverts mixed grey and black, the grey disappearing near the hinder border; the chin and throat, too, are paler yellow. Soft parts and dimensions as in *C. franklini*.

Distribution. Discovered on the hills of Karennee by Wardlaw Ramsay, and found common above 3000 feet on the Muleyit range, east of Moulmein, by Tickell, Davison, and Fea. Also found at Perak, in the Malay Peninsula, by Mr. L. Wray.

Genus **XANTHOLÆMA**, Bonaparte, 1854.

This genus comprises six small Barbets of the Oriental region, three out of the number occurring in India, Ceylon, and Burma. They are distinguished from all other Indian genera of *Capitonidæ* by a differently shaped and more pointed wing, the 2nd primary, instead of being shorter than any other primary except the first, being always longer than the 8th, 9th, and 10th, and sometimes longer than the 6th. The bill is short and thick; the rictal bristles long, often reaching to the end of the bill. The naked orbit is small. Prevailing colour green, with patches of red or yellow and other bright colours about the head.

Key to the Species.

Throat yellow, cheeks blackish	*X. hæmatocephala*, p. 98.
Throat orange, cheeks blue	*X. rubricapilla*, p. 100.
Throat crimson	*X. malabarica*, p. 99.

1019. **Xantholæma hæmatocephala.** *The Crimson-breasted Barbet or Coppersmith.*

Bucco hæmatocephalus, *P. L. S. Müll. Natursyst., Anhang,* p. 88 (1776).
Bucco philippinensis, *Gm. Syst. Nat.* i, p. 407 (1788); *Sundevall, A. M. N. H.* (1) xviii, p. 397.
Bucco indicus, *Lath. Ind. Orn.* i, p. 205 (1790).
Megalaima philippensis, *Blyth, Cat.* p. 68.
Xantholæma indica, *Horsf. & M. Cat.* ii, p. 644; *Jerdon, B. I.* i, p. 315; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 22; *King, ibid.* p. 214; *Beavan, Ibis,* 1869, p. 416; *McMaster, J. A. S. B.* xl, pt. 2, p. 209; *Walden, Ibis,* 1871, p. 162.
Xantholæma hæmacephala, *Marshall, Mon. Cap.* p. 101, pl. 42; *Hayes Lloyd, Ibis,* 1873, p. 407; *Adam, S. F.* ii, p. 466; *Butler, S. F.* iii, p. 460; ix, p. 387; *Blanford, S. F.* v, p. 245; *Hume & Dav. S. F.* vi, p. 155; *Ball, S. F.* vii, p. 206; *Cripps, ibid.* p. 264; *Legge, Birds Ceyl.* p. 218; *Hume, Cat.* no. 197; *Scully, S. F.* viii, p. 253; *Vidal, S. F.* ix, p. 54; *Reid, S. F.* x, p. 26; *Oates, B. B.* ii, p. 136; *id. in Hume's N. & E.* 2nd ed. ii, p. 329; *Barnes, Birds Bom.* p. 122; *Hume, S. F.* xi, p. 69.
Megalæma hæmacephala, *Blyth & Wald. Birds Burm.* p. 74; *Fairbank, S. F.* v, p. 397.
Xantholæma hæmatocephala, *Shelley, Cat. B. M.* xix, p. 89.

Kat-Khora, Tambayat, H.; *Chota bussunt bairi, Chota-benebo,* Beng.; *Phouk Bussunt,* Manbhúm; *Bussunta lisora,* N.W.P.; *Juktuk,* Mahr.; *Tokoji,* Tel.; *Kokoorupan,* Tamil (Ceylon); *Kotoruwa, Mal-Kotoruwa,* Cing.; *Hnet-padane,* Burm.

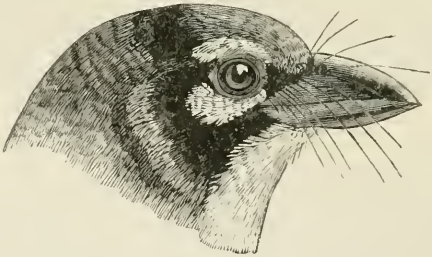

Fig. 27.—Head of *X. hæmatocephala.*

Coloration. Lores black; forehead and sinciput crimson, a black band across the vertex extending down each side of the head behind the eye to the malar region; occiput and sides of neck greyish green, remainder of upper parts olivaceous green, varying to yellowish; primary-coverts and quills blackish, the quills with pale yellow inner margins, and some primaries pale-edged outside near the tip; a broad supercilium and a still broader streak below the eye, with the chin and throat, bright yellow; fore neck crimson, fringed below by golden yellow; breast, abdomen, and under tail-coverts yellowish white, streaked longitudinally with olive or olivaceous green, especially on the flanks; tail faintly washed beneath with pale verditer-blue.

The young is duller in colour and wants the crimson and black on the head.

Bill black; irides dark hazel; nude orbital skin dull crimson; feet coral-red; claws black (*Jerdon*).

Length about 6·5; tail 1·5; wing 3·2; tarsus ·8; bill from gape ·9.

Distribution. Common throughout the greater part of the Empire, with the exception of the Himalayas and the higher ranges of the Peninsula and Burma. Rare in the Punjab, Sind, and Cutch, in Southern Malabar (south of Ratnagiri), and in the damper forests of Ceylon, in Assam, the hill-tracts south of the Assam Valley, and in Southern Tenasserim. This bird is only found in the valleys of the outer Himalayas up to 2000 or 3000 feet. It ranges to the Malay Peninsula, Sumatra, and the Philippines.

Habits, &c. One of the commonest and most familiar of Indian birds, the "Coppersmith" may be found in almost every garden, mango-grove or banyan tree, and its monotonous note *took, took, took*, resembling the tap of a hammer on metal, repeated at short regular intervals, is well known to most residents in the country. This bird, like other Indian Barbets, lives on fruit, but it takes insects occasionally. Captain Bulger (Ibis, 1866, p. 218) saw it feeding on flying termites. It breeds in Northern India in March, April, and May, earlier farther south, and in Ceylon from January to June, excavating a nest-hole of the usual kind and laying usually 3 or 4 eggs, which are white, fragile, with little or no gloss, and measure about ·99 by ·69.

1020. **Xantholæma malabarica.** *The Crimson-throated Barbet.*

Bucco malabaricus, *Blyth, J. A. S. B.* xvi, pp. 386, 465 (1847).

Megalaima malabarica, *Blyth, Cat. App.* p. 336; *Fairbank, S. F.* iv, p. 255; *Vidal, S. F.* ix, p. 54.

Xantholæma malabarica, *Horsf. & M. Cat.* ii, p. 647; *Jerdon, B. I.* i, p. 317; *Marshall, Mon. Cap.* p. 111, pl. 45; *Bourdillon, S. F.* iv, p. 392; *Hume, Cat.* no. 198; *Butler, S. F.* ix, p. 387; *Davison, S. F.* x, p. 358; *Barnes, Birds Bom.* p. 123; *Shelley, Cat. B. M.* xix, p. 95; *Oates in Hume's N. & E.* 2nd ed. ii, p. 332; *Davidson, Jour. Bomb. N. H. Soc.* vi, p. 336.

Coloration. Crown and upper parts, wings and tail as in *X. hæmatocephala*, except that the general colour is grass-green. The band above and that below the eye, a spot at the base of the lower mandible on each side, chin, throat, and fore neck crimson, the malar and gular areas fringed with golden yellow; the black of the vertex runs down on each side behind the eye and the subocular crimson patch but does not extend to the malar area; sides of head behind the black, and area between ear-coverts and throat, light greyish blue, lower parts from neck pale green, the feathers of the flanks darker green near the shafts.

Bill black; irides red-brown; legs red (*Jerdon*).

Length 6·25; tail 1·5; wing 3·2; tarsus ·8; bill from gape ·85.

Distribution. The forest-tracts near the Malabar coast as far north as Ratnagiri.

Habits, &c. Similar to those of *X. hæmatocephala*, but the call is more subdued. The eggs were obtained by Mr. Bourdillon in South Travancore on March 6th, and are white, without gloss, and measure ·98 by ·65.

1021. **Xantholæma rubricapilla.** *The Small Ceylon Barbet.*

Bucco rubricapillus, *Gmel. Syst. Nat.* i, p. 408 (1788).
Megalaima rubricapilla, *Blyth, Cat.* p. 68; *Layard, A. M. N. H.* (2) xiii, p. 448.
Xantholæma rubricapilla, *Horsf. & M. Cat.* ii, p. 646; *Blyth, Ibis,* 1867, p. 297; *Marshall, Mon. Cap.* p. 109, pl. 44; *Holdsworth, P. Z. S.* 1872, p. 430; *Hume, S. F.* vii, p. 371; *id. Cat.* no. 198 bis; *Legge, Birds Ceyl.* p. 215, pl. xi; *Oates in Hume's N. & E.* 2nd ed. ii, p. 333; *Shelley, Cat. B. M.* xix, p. 93.

Mal-Kotoruwa, Cing.

Coloration. Plumes associated with rictal bristles, a band above and one below the eye, chin, and throat golden yellow; a narrow black frontal band; no red spot at the base of the lower mandible on each side; a small crimson patch on the fore neck: otherwise similar to *X. malabarica.*

Length about 6; tail 1·4; wing 3·1; tarsus ·75; bill from gape ·85.

Distribution. Peculiar to the island of Ceylon; found in the low country and up to about 2500 feet elevation.

Habits, &c. Similar to those of *X. hæmatocephala*, but the voice is more subdued. The breeding-season is from March till June; the eggs glossy white, measuring about ·9 by ·65.

Order V. ANISODACTYLI.

Scarcely any two modern ornithologists are agreed as to the affinities between the Rollers and several other groups of Picarian birds, especially the Kingfishers, Bee-eaters, Hornbills, Hoopoes, Swifts, and Nightjars[*]. All these, except the Hoopoes, have a peculiar and variable arrangement of the deep plantar tendons (see Garrod, P. Z. S. 1875, p. 344). The two tendons coalesce more or less completely either before their subdivision to supply the different digits or below the point at which a slip leaves the *flexor perforans digitorum* to supply the hallux.

In other respects, such as the characters of the palate and sternum, the form of the dorsal feather-tracts, presence or absence of cæca, and the nature of the oil-gland, whether nude or tufted, there is much variation, and the majority of the families mentioned differ from each other quite as much as the Passeres and Eurylæmi do. It appears very doubtful whether the Swifts have any affinity to the other groups, and the *Caprimulgidæ* and *Podargidæ* are also isolated. In adopting Gadow's arrangement and leaving the *Coraciadæ* or Rollers, *Meropidæ* or Bee-eaters, *Alcedinidæ* or Kingfishers, *Bucerotidæ* or Hornbills, and *Upupidæ* or Hoopoes in one order, I am very largely influenced by a desire to avoid increasing the number of ordinal groups.

The Anisodactyli have a desmognathous palate; basipterygoid processes are rudimentary or absent. Sternal characters vary. There is no ambiens muscle. A hallux is always present, and there are almost constantly three anterior toes, more or less joined together at the base. All the species lay white eggs in a hole, either in a tree or in the ground, and the young are hatched naked. The sexes are alike as a rule, but when they differ in plumage the young resemble adults of the same sex.

There are five Indian suborders, thus distinguished:—

a. Oil-gland nude; cæca present; 4 notches behind sternum.
  a′. Two carotids; manubrium sterni simple, no foramen behind it .... Coraciæ.
  b′. Left carotid only; manubrium sterni complex and having behind it a perforation to receive ends of coracoids .... Meropes.

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[*] Compare Garrod, P. Z. S. 1874, p. 117; Sclater, Ibis, 1880, p. 401; Forbes, Ibis, 1881, p. 31; Seebohm, Classification of Birds and Supplement; Fürbringer, Untersuchungen, p. 1567; Sharpe, Review of Recent Attempts to Classify Birds, pp. 79–81; Gadow, P. Z. S. 1892, p. 251. See also vols. xvi and xvii of the British Museum Catalogue of Birds.

b. Oil-gland tufted ; cæca absent.
  c'. Four notches behind sternum .... HALCYONES.
  d'. Two notches behind sternum.
    a''. No lateral bare tracts (apteria) on neck ; 11 primaries .... BUCEROTES.
    b''. Lateral cervical apteria present ; 10 primaries .... UPUPÆ.

The South-American Motmots and W.-Indian Todies also belong here.

Suborder *CORACIÆ.*

Cæca present. Oil-gland nude. Sternum with four notches on the posterior margin, and the manubrium sterni consists of the outer process (spina externa) only and is long and not distinctly forked. Both carotids are present. The spinal feather-tract well defined on the neck, but forked on the upper back, to leave a dorsal apterium or featherless space. 14 cervical vertebræ. The plantar tendons blend completely before subdividing at all.

A single family.

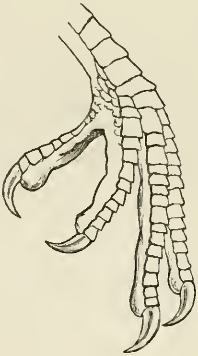

Fig. 28.—Left foot of *C. indica.*

Family CORACIADÆ.

Bill corvine in shape, the upper mandible notched beneath near the end, culmen rounded. Outer united to the middle toe at the extreme base, inner toe united by its basal joint. Nostrils at the base of the mandible. Primaries 10 ; tail-feathers 12. Sexes alike.

This family is found in tropical and temperate regions of the Old World. Two genera are Indian.

Key to the Genera.

a. Bill compressed; breadth at gape about half length of culmen	CORACIAS, p. 103.
b. Bill short, broad; breadth at gape about equal to culmen	EURYSTOMUS, p. 107.

Genus **CORACIAS**, Linn., 1766.

Bill rather long, compressed, culmen slightly curved, nostrils elongate; gape wide, with strong rictal bristles.

To this genus belong three Indian and Burmese birds, of which one is migratory and only occurs in North-western India. Species are found throughout Africa, Europe and Central Asia, and in Celebes.

Key to the Species.

a. Lower parts only blue in part.	
a'. Under wing-coverts, abdomen, and lower tail-coverts pale blue	*C. indica*, p. 103.
b'. Under wing-coverts deep blue, pale blue confined to vent and lower tail-coverts	*C. affinis*, p. 105.
b. Lower parts pale blue throughout	*C. garrula*, p. 106.

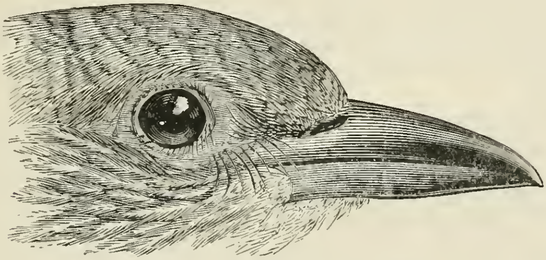

Fig. 29.—Head of *C. indica*.

1022. **Coracias indica.** *The Indian Roller.*

Coracias indica, *Linn. Syst. Nat.* i, p. 159 (1766); *Blyth, Cat.* p. 51; *Horsf. & M. Cat.* ii, p. 571; *Jerdon, B. I.* i, p. 214; *Stol. J. A. S. B.* xxxvii, pt. 2, p. 19; *Brooks, J. A. S. B.* xli, pt. 2, p. 73; *Hume, S. F.* i, p. 167; *id. Cat.* no. 123; *Blanf. East. Pers.* ii, p. 126; *Legge, Birds Ceyl.* p. 281; *Scully, S. F.* viii, p. 237; *Murray, Vert. Zool. Sind*, p. 109; *Barnes, Birds Bom.* p. 97; *id. Jour. Bomb. N. H. Soc.* iv, p. 9; *Davidson, Jour. Bomb. N. H. Soc.* i, p. 176; *Oates in Hume's N. & E.* 2nd ed. iii, p. 53; *Sharpe, P. Z. S.* 1890, p. 547; *id. Cat. B. M.* xvii, p. 10.

Nilkant, *Sabzak*, H.; *Tás*, Mahr.; *Pálú pitta*, Tel.; *Kattu kadei*, *Pal-kuruvi*, Tam.; *Panang-karda*, Tam. Ceylon; *Doong-kowluwa*, Cing.; *Blue Jay* or *Jay* of Europeans in India.

Coloration. Narrow forehead and chin pale brownish rufous; crown and nape bluish green, brighter and bluer above the eyes; hind neck and sides of neck deep vinous; back, scapulars, and tertiaries dull greenish brown; small coverts near the edge of the wing deep purplish blue, other coverts light greyish green, except the outer large primary and the tips of the other greater coverts, which, with the edge of the wing, all under wing-coverts, and axillaries, are pale blue; quills deep purplish blue; a broad light blue band across the terminal half of the primaries, the tips dark, with the outer webs greenish. Rump light greenish blue, mixed with deep blue; upper tail-coverts chiefly deep blue; middle tail-feathers dull dark green, basal part near shaft blue; other tail-feathers deep blue, crossed near the tip by a broad pale blue band, wider on the outer feathers. Sides of head and throat purplish lilac, with broad whitish shaft-stripes; breast vinous rufous, with less marked white shaft-stripes; abdomen and lower tail-coverts pale blue like wing-lining.

Bill blackish brown; iris greyish brown; eyelid and naked skin round the eye pale gamboge; feet brownish yellow (*Butler*).

Length about 13; tail 5; wing 7·3; tarsus 1; bill from gape 1·7.

Distribution. Throughout India and Ceylon in suitable localities, not ascending the Himalayas nor the hills of the Peninsula in general, and wanting both in thick jungle and in open treeless deserts. East of Calcutta this species is replaced by *C. affinis*, but to the westward, though it becomes rare in the Northern Punjab and wanting in Kashmir, it is found sparingly throughout Baluchistan, all round the shores of the Persian Gulf to Muscat, and stragglers have even been obtained in Asia Minor and on the Bosphorus.

Habits, &c. This is one of the typical Indian birds familiar to all inhabitants of the country. It is commonly found in cultivated tracts on trees about villages, and in thin tree and bush jungle. It is, as Blyth remarks, one of the birds that perch on telegraph, wires. Jerdon says:—"It generally takes its perch on the top or outermost branch of some high tree, and, on spying an insect on the ground, which it can do at a very great distance, it flies direct to the spot, seizes it, and returns to its perch to swallow it. A favourite perch of the Roller is a bowrie pole, or some leafless tree, whence it can see well all round, also old buildings, a haystack or other elevated spot, sometimes a low bush or a heap of earth or of stones. When seated, it puffs out the feathers of its head and neck. I have on several occasions seen one pursue an insect in the air for some distance, and when the winged termites issue from their nest after rain, the Roller, like almost every other bird, catches them on the wing." (The Roller is also conspicuous at jungle fires, hunting for insects, and perhaps for lizards, in company with kites, crows, and king-crows.) "It flies in general with a slow but continued flapping of its wings, not unlike the crow, though more buoyant; but it has the habit of occasionally making sudden darts in the air in all directions. Its food is chiefly large insects, grasshoppers, crickets, *Mantidæ*, and even beetles, occasionally a small fieldmouse or shrew." "The Roller has a very harsh grating cry or scream, which it always utters when disturbed and often at other times also." "The Nilkant is sacred to Siva, who assumed its form, and at the feast of the Dusserah at Nagpur, one or more used to be liberated by the Rajah." The liberation of this bird takes place during other Hindu ceremonies in various parts of India.

In most parts of India the Roller is resident, but it leaves the open Bombay Deccan for better wooded tracts, according to several observers, during the breeding-season. It breeds from March in Upper India, from January in Ceylon, till June or July, but chiefly in March, April, and May, making use of a hole in a tree, or sometimes in an old wall or the roof of a house. The nest is generally lined with a varying amount of vegetable fibre, grass, a few feathers or some old rags, but the lining is often omitted altogether. The eggs are a broad oval, of the purest china-white and very glossy, usually 4 in number (occasionally 5); they measure about 1·3 by 1·06.

1023. **Coracias affinis.** *The Burmese Roller.*

Coracias affinis, *McClelland, P. Z. S.* 1839, p. 164; *Blyth, J. A. S. B.* xiv, p. 190; *id. Cat.* p. 51; *Horsf. & M. Cat.* ii, p. 574; *Jerdon, B. I.* i, p. 217; *Hume, S. F.* iii, pp. 50, 262; v, p. 18; xi, p. 43; *id. Cat.* no. 124; *Blyth & Wald. Birds Burm.* p. 72; *Hume & Dav. S. F.* vi, p. 72; *Anders. Yunnan Exped., Aves,* p. 581; *Oates, B. B.* ii, p. 69; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 589; *Oates in Hume's N. & E.* 2nd ed. iii, p. 56; *Sharpe, P. Z. S.* 1890, p. 548; *id. Cat. B. M.* xvii, p. 13.

Katnas, Konsa, Assam; *Tak-räl,* Lepcha; *Hnet-Kah,* Burm.

Coloration. Head above pale dull green, passing into bright pale verditer-blue on the broad and long supercilia; back, scapulars, and tertiaries olive-brown; smaller and median wing-coverts dark blue, greater secondary-coverts bluish green, greater primary-coverts pale blue, quills deep blue with a bar of pale blue across the terminal half of the primaries; rump deep blue; upper tail-coverts pale blue; middle tail-feathers dusky green, the others deep blue at the base, light blue on the terminal half, slightly tipped with dusky; sides of head, chin, and throat purplish blue, the throat-feathers with shining blue shaft-stripes; breast vinaceous brown, passing on lower abdomen into dark, then into pale blue; wing-lining deep purplish blue throughout.

Bill dark brownish black, mouth yellow; edges of the eyelids, lores, and skin at the back of the eye yellowish orange; iris brown; legs yellowish brown.

Length about 13; tail 4·75; wing 7·5; tarsus 1; bill from gape 1·7.

Distribution. Throughout Burma except in the extreme south of Tenasserim, also in Siam and Cochin China, and through the countries north of Burma to the foot of the Himalayas in Assam. This species is found in Tipperah, Cachar, and Sylhet; but north of the head of the Bay of Bengal, from Calcutta to Tipperah and from Eastern Nepal to Assam, over a belt 150 or 200 miles broad between E. long. 88° and 91°, intermediate forms between *C. indica* and *C. affinis* prevail. These I regard as hybrids, as each of the two forms is found constant in character throughout a wide area.

Habits, &c. Similar to those of *C. indica.* This bird breeds in March, April, and May, and lays 4 or 5 white eggs, measuring about 1·37 by 1·09.

1024. **Coracias garrula.** *The European Roller.*

Coracias garrula, *L. Syst. Nat.* i, p. 159 (1766); *Blyth, Cat.* p. 51; *Horsf. & M. Cat.* p. 570; *Jerdon, B. I.* i, p. 218; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 19; *Brooks, J. A. S. B.* xli, pt. 2, p. 73; *Jerdon, Ibis,* 1872, p. 3; *G. F. L. Marsh. ibid.* p. 205; *Blyth, Ibis,* 1873, p. 80; *Hume & Henders. Lah. to Yark.* p. 177; *Hume, S. F.* i, p. 168; *Blanford, East. Pers.* ii, p. 125; *St. John, S. F.* v, p. 502; *Butler, S. F.* vii, p. 181; *Hume, Cat.* no. 125; *Biddulph, Ibis,* 1881, p. 48; *Scully, ibid.* p. 429; *C. Swinh. Ibis,* 1882, p. 102; *Davidson, S. F.* x, p. 296; *id. Jour. Bomb. N. H. Soc.* i, p. 176; *Littledale, ibid.* p. 197; *Barnes, Birds Bom.* p. 98; *St. John, Ibis,* 1889, p. 157; *Oates in Hume's N. & E.* 2nd ed. iii, p. 56; *Sharpe, P. Z. S.* 1890, p. 549; *id. Cat. B. M.* xvii, p. 15.

Nila Kras, Kashmir.

Coloration. Narrow forehead and chin hoary white; head, neck, and lower parts, including the wing-lining, pale blue with a greenish tinge; head above and nape brighter, throat with bright longitudinal streaks; back, scapulars, and tertiaries light brownish rufous; wing-coverts pale blue, smaller coverts along the forearm deep blue, greater primary-coverts very pale blue, tipped dusky; quills black, some of the primaries with a greenish gloss on the outer web outside, inner webs of all deep blue on the under surface; rump deep purplish blue, more or less mixed with light blue and passing into light greenish blue on the upper tail-coverts; middle pair of tail-feathers dull bronze-green, brighter along the shafts, about the basal two-thirds of outer webs of other tail-feathers dull green, of inner webs black, terminal portion of both webs, broader on the outer feathers, pale blue, extreme tips of outer pair blackish.

Young birds are duller and browner.

Bill black; iris dark brown; feet yellowish brown.

Length about 12; tail 5; wing 7·8; tarsus ·9; bill from gape 1·6.

Distribution. A migratory bird, wintering in Africa, passing the summer and breeding in Europe and Central Asia (Persia, Turkestan). It also breeds commonly in Kashmir and the Peshawur Valley, and is found during migration in Sind and throughout the Punjab. Specimens have been collected as far east as Dhulia in

Khandesh, Ahmedabad, the Satpura hills, Ajmere, Mussooree, and Garhwál.

Habits, &c. Very similar to those of *C. indica*, but the present species is more often seen away from trees. It has the same peculiar flight, the same habit of tumbling about in the air (whence the name of Roller), and a similar harsh voice, and it lives on insects in the same way. It nidificates sometimes in holes or hollows in trees, often in cliffs or sandy banks, or mud walls, occasionally in ruins, and lays from May to July 4 or 5 or rarely 6 white, glossy, long oval eggs, measuring on an average 1·52 by 1·1.

Mr. Blyth states that he saw a skin from Kashmir showing intermixture of this species with *C. indica.*

Genus **EURYSTOMUS**, Vieill., 1816.

Bill short and broad; width of the gape about equal to the length of the culmen, the terminal part compressed and the upper mandible hooked; no rictal bristles.

A single species is Indian; other species occur in Madagascar and tropical Africa, China, the Malay Archipelago, and Australia.

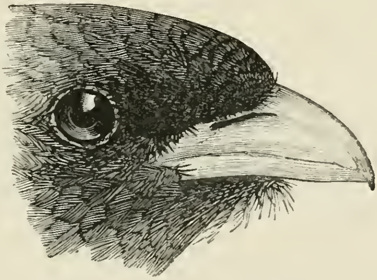

Fig. 30.—Head of *E. orientalis.*

1025. **Eurystomus orientalis.** *The Broad-billed Roller.*

Coracias orientalis, *Linn. Syst. Nat.* i, p. 159 (1766).

Eurystomus orientalis, *Blyth, Cat.* p. 51: *Layard A. M. N. H.* (2) xii, p. 171; *Horsf. & M. Cat.* p. 121; *Jerdon, B. I.* i, p. 219; *id. Ibis*, 1872, p. 3; *Blyth, Ibis*, 1866, p. 345; *Ball, J. A. S. B.* xli, pt. 2, p. 277; *Vipan, S. F.* i, p. 495; *Hume, S. F.* ii, p. 164; xi, p. 43; *id. Cat.* no. 126; *Morgan, S. F.* ii, p. 531; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 154; *Blyth, Birds Burm.* p. 72; *Bourdillon, S. F.* iv, p. 382; *Legge, Birds Ceyl.* p. 285; *Hume & Dav. S. F.* vi, p. 72; *Davison, S. F.* x. p. 351; *Oates, B. B.* ii, p. 70; *id. in Hume's N. & E.* 2nd ed. iii, p. 57; *Dresser, Ibis*, 1891, p. 99; *Sharpe, Cat. B. M.* xvii, p. 33, pl. ii, fig. 6.

Eurystomus lætior, *Sharpe, P. Z. S.* 1890, p. 551; *id. Cat. B. M.* xvii, p. 36.

Eurystomus calorynx, *Hodgs. in Gray's Zool. Misc.* p. 82 (descr. nulla).

Eurystomus calonyx, *Sharpe, P. Z. S.* 1890, p. 551; *id. Cat. B. M.* xvii, p. 38, pl. ii, fig. 2.

Tak-räl-vong, Lepcha; *Mo-goun-hnet*, Burmese.

Coloration. Head and neck above and at the sides blackish brown, more or less tinged with green; back much greener, passing into dark bluish green on the rump and upper tail-coverts, and on the scapulars and tertiaries, and into brighter greenish blue on the wing-coverts; primary-coverts deep blue, quills black, deep blue on the outer webs, the outer primaries crossed near the base by a broad pale blue band; tail-feathers black, the outer webs above and the inner below washed for a varying distance from the base with deep blue; throat deep blue, with bright blue shaft-stripes; remainder of lower surface greenish blue, darker on the breast.

Bill, legs, and feet deep vermilion, tip of bill black; iris dark brown; gape yellowish (*Oates*).

The young is duller in colour, wants the bright blue streaks on the throat, and has a black bill.

Length about 12; tail 4; wing 7·5; tarsus ·8; bill from gape 1·7.

Ceylon and Travancore birds are deeper in colour, the head very dark, almost black, and the underparts bluer. These form a well-marked race or subspecies, *E. lætior* of Sharpe. Sharpe also distinguishes the Himalayan and Chinese and some Burmese and Malay birds under the name *E. calonyx*, on account of the blue on the outer webs of the tail-feathers extending to the terminal half of the feathers and of the outer webs of the secondaries being washed with blue; and he regards *E. calonyx* as a migratory and *E. orientalis* as a non-migratory form; but I find considerable variation, and doubt whether two forms can be distinguished.

Distribution. Along the base of the Himalayas as far west as Kumaun up to about 3000 feet and from Lower Bengal, Cachar, and Assam locally throughout the Burmese countries to China and Manchuria, Siam and Cochin China, and down the Malay Peninsula to Sumatra, Java, Borneo, and the Philippines; common in the Andamans. Also found in Southern India near the Malabar coast as far north as the Wynaad, and in Ceylon, where this bird is rare.

Habits, &c. A forest bird, resident or locally migratory, haunting high trees and usually perching on a dead tree or branch, sometimes on a bamboo, whence it flies down to capture insects. It is somewhat crepuscular in its habits and is generally silent; its call is a monosyllabic deep-toned whistle, but occasionally in the breeding-season it makes a chattering noise. In confinement it eats plantains. It breeds in March and April, in holes in branches of trees, as a rule at a considerable height from the ground, and lays on the bare wood usually 3 white eggs, measuring about 1·38 by 1·15.

Suborder *MEROPES*.

Only the left carotid is present. The manubrium sterni is trifid, the inner portion being forked, and the outer single. Behind the spine is a foramen as in *Upupidæ* and *Bucerotidæ*. Cervical vertebræ 15. The *flexor perforans digitorum* gives off from its inner side the slip which supplies the hallux, before blending with the *f. longus hallucis*. The conjoined tendons then divide into three to supply the other toes. Other characters as in *Coraciæ*.

A single family.

Family MEROPIDÆ.

Bill long, slender, and curved throughout, culmen ridged, both mandibles pointed; legs and feet feeble, syndactyle, the outer or fourth toe united to the third or middle toe as far as the last joint, second and third toes united by the basal joint only. Tail-feathers 12. Primaries 10. Sexes alike or nearly so.

Key to the Genera.

a. Breast-plumes not elongate; wing pointed; 2nd quill longest.	
a'. Middle pair of tail-feathers much longer than the others	MEROPS, p. 109.
b'. Middle tail-feathers not longer........	MELITTOPHAGUS, p. 114.
b. Breast-plumes elongate, pendent, and brightly coloured; wing rounded; 4th quill longest	NYCTIORNIS, p. 115.

Genus **MEROPS**, Linn., 1766.

Bill very long, slender, and pointed, nostrils partially covered by plumes; a few small rictal bristles at the base of the bill; wings long, pointed, 1st primary minute, 2nd longest; the two middle tail-feathers longer than the others, and with their terminal portion narrow.

The genus ranges throughout the greater part of the Old World; four species are Indian.

Key to the Species.

a. Throat green or chestnut; middle tail-feathers exceed others by more than length of culmen.	
a'. Throat green or bluish green: wing 3·6 ..	*M. viridis*, p. 110.
b'. Chin yellow, throat chestnut: wing 5–6.	
a''. Tail blue above	*M. philippinus*, p. 111.
b''. Tail green above	*M. persicus*, p. 112.
b. Chin and throat yellow; middle tail-feathers exceed outer by less than length of culmen .	*M. apiaster*, p. 113.

The habits of all the Bee-eaters are similar. All feed on insects, and the larger species very much on bees and wasps, which they capture in the air, seize across the body, and crush, either with their mandibles or by beating the insect against their perch, before swallowing. They select a perch with a good look-out, often a dead branch at the top of a tree or bush, and they are fond of sitting on telegraph-wires. They generally, after sallying forth and hunting, return to the same perch. They have a pleasant whistling note: they generally live in colonies and make long nest-holes, two or three inches in diameter and often several feet deep, in the bank of a river, on a hill-side, or sometimes on level ground; at the bottom of this hole they hollow out a chamber, in which their eggs, which are white, glossy, and very spherical ovals, are laid, usually without any lining.

1026. **Merops viridis.** *The Common Indian Bee-eater.*

Merops viridis, *Linn. Syst. Nat.* i, p. 182 (1766); *Blyth, Cat.* p. 53; *Horsf. & M. Cat.* p. 84; *Jerdon, B. I.* i, p. 205; *Stoliczka, J. A. S. B.* xxxvii, p. 19; *Hume, S. F.* i, p. 167; iii, p. 49; xi, p. 42; *id. Cat.* no. 117; *Adam, S. F.* i, p. 371; *Blyth & Wald. Birds Burm.* p. 73; *Morgan, Ibis,* 1875, p. 314; *Hume & Dav. S. F.* vi, pp. 67, 498; *Legge, Birds Ceyl.* p. 309; *Scully, S. F.* viii, p. 237; *Davison, S. F.* x, p. 350; *Oates, B. B.* ii, p. 65; *id. in Hume's N. & E.* 2nd ed. iii, p. 60; *Barnes, Birds Bomb.* p. 93; *Dresser, Mon. Mer.* p. 31, pl. ix; *Sharpe, Cat. B. M.* xvii, p. 78.

Merops ferrugeiceps *and* M. torquatus, *Hodgs. Gray's Zool. Misc.* p. 82 (1844), descr. nulla.

Merops indicus, *Jerdon, Madr. Jour. L. S.* xi, p. 227.

Patringa, Harriál, H.; *Bánspati* in Bengal; *Tailingi, Veda Rághú,* Mahr.; *Chinna passeriki,* Tel.; *Kurumenne Kurulla,* Cing.; *Kattalan Kuruvi,* Tamil, Ceylon; *Monagyi,* Arrakan; *Hnet-pasin-to,* Burm. Several of these terms are also used for other species of *Merops.*

Coloration. Upper parts, including wing-coverts and tertiaries, bright green, sometimes more or less tinged with ferruginous or golden on the crown, nape, and upper back, tertiaries and rump a little bluer; lores and a band under the eye to the ear-coverts black, primary and secondary quills pale rufous, greenish on the outer webs, tipped blackish; tail duller green above, dark brown below, tips of the elongate middle feathers blackish; lower parts green; a black gorget; chin and cheeks, and sometimes the throat, bluish or even verditer-blue; lower abdomen and lower coverts also sometimes bluish.

Bill black; irides blood-red; feet dark plumbeous (*Jerdon*).

Length about 9; tail 4·5–5, outer rectrices 2·9; wing 3·6; tarsus ·4; bill from gape 1·4.

Specimens with a ferruginous head are more common to the eastward, especially in Burma; birds from the North-west Provinces show the blue throat best, but the intensity of this colour appears to increase as the plumage gets worn. Both of the varieties are occasionally found in Southern India.

Distribution. Common and resident almost throughout India, Ceylon, and Burma. Wanting in the Himalayas, where this species rarely occurs, even in the lower ranges, though there are specimens from Kashmir and Murree in the Hume Collection. Absent also as a rule on the higher hills of the Peninsula, and in some of the denser and damper forests. In Ceylon *M. viridis* is only found in the drier parts of the low country. In Tenasserim it has not been observed south of Mergui, and it does not occur in the Malay Peninsula nor in the Andamans or Nicobars, though it is found in Siam and Cochin China. West of India it extends through Baluchistan and Southern Persia to North-eastern Africa.

Habits, &c. One of the commonest and most familiar of Indian birds; a resident in general, but locally migratory in some places: thus it is said to leave the island of Bombay from April till September. It has the usual habits of Bee-eaters, but generally prefers a lower perch than the larger species; it lives on various insects, usually captured in the air, and it has a pleasant whistling note. It breeds from the middle of March till the beginning of June, and lays from 3 to 5 eggs at the end of a hole which it digs to a depth of 1½ to 5 feet, usually in a bank or cliff. The eggs are spherical ovals, white and glossy, and measure about ·78 by ·7.

1027. **Merops philippinus.** *The Blue-tailed Bee-eater.*

Merops philippinus, *Linn. Syst. Nat.* ed. xiii (*Vindob.*), i, p. 183 (1767); *Jerdon. Madr. Jour. L. S.* xi, p. 228; *Blyth, Cat.* p. 52; *Horsf. & M. Cat.* p. 86; *Walden, Tr. Z. S.* viii, p. 42; *Hume, S. F.* iii, p. 456; iv, pp. 36, 287; xi, p. 42; *id. Cat.* no. 118; *Blyth & Wald. Birds Burm.* p. 72; *Hume & Dav. S. F.* vi, pp. 67, 498; *Ball, S. F.* vii, p. 203; *Cripps, ibid.* p. 258; *Legge, Birds Ceyl.* p. 306; *Doig, S. F.* viii, p. 370; *Vidal, S. F.* ix, p. 49; *Bingham, ibid.* p. 152; *Butler, ibid.* p. 381; *Davison, S. F.* x. p. 350; *Oates, B. B.* ii, p. 66; *Dresser, Mon. Mer.* p. 55, pl. xv; *Barnes, Birds Bom.* p. 94; *Littledale, Jour. Bomb. N. H. Soc.* i, pp. 31, 196; *Oates in Hume's N. & E.* 2nd ed. iii, p. 63; *Sharpe, Cat. B. M.* xvii, p. 71.

Merops philippensis, *Jerdon, B. I.* i, p. 207; *Ball, S. F.* i, p. 57; *Anderson, Yunnan Exp., Aves*, p. 581.

Merops daudini, *Cuv. Règne Anim Nouv. éd.* i, p. 442 (1829), descr. nulla; *Hume, S. F.* ii, p. 162; iii, p. 49.

Bara patringa, H.; *Komu passeriki*, Tel.; *Huet-pasin-to*, Burm.

Coloration. Lores and a streak past the eye to the ear-coverts black, bordered above by a narrow pale verditer-blue supercilium and below by a broader blue line. Upper parts to rump, including the wing-coverts, green with a rufous tinge passing into the verditer-blue of the rump, upper tail-coverts, and tail; tertiaries also sometimes bluish; middle pair of tail-feathers with elongate black tips, and all tail-feathers dark brown beneath: wing-feathers more rufous green than the back, all except the tertiaries tipped with black, the outer webs bluish or brighter greenish towards the tip; chin yellow; throat chestnut, passing into green on the breast, this passes into pale blue round the vent and on the lower tail-coverts; wing-lining light brownish rufous.

Bill black; irides crimson; legs dusky plumbeous (*Jerdon*).

Length about 12; tail 5–6, outer feathers only 3·5; wing 5·25; tarsus ·5; bill from gape 2.

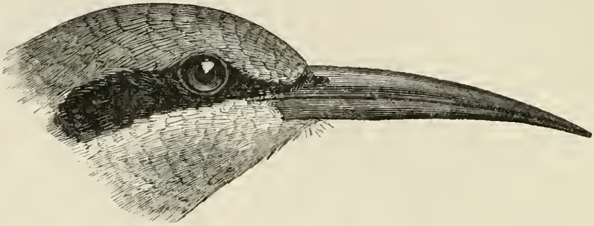

Fig. 31.—Head of *M. philippinus.*

Distribution. Throughout the greater part of the Oriental region. This Bee-eater is generally but somewhat locally distributed over India, Ceylon, and Burma, extending west to Sind, but not found in the Himalayas.

Habits, &c. A resident species, but partially migratory in many places, and in Ceylon merely a winter visitant; it keeps much to forest countries and well-wooded districts, and generally breeds in the banks of rivers. It feeds on wasps, bees, dragonflies, beetles, and even butterflies. It sometimes congregates in large numbers, but is more often seen in small companies or singly. Its voice is described by Jerdon as a full, mellow, rolling whistle. It breeds, usually in large colonies, from March to June, in a hole 4 to 7 feet long, the egg-chamber being occasionally lined with grass or feathers; it lays usually four or five white, glossy, nearly spherical eggs, measuring about ·88 by ·76.

1028. **Merops persicus.** *The Blue-cheeked Bee-eater.*

Merops persicus, *Pall. Reis. Russ. Reichs*, ii, *Anhang*, p. 708 (1773); *Blyth, Cat.* p. 52; *Davids. & Wend. S. F.* vii, p. 77; *Hume, Cat.* no. 120; *Scully, Ibis*, 1881, p. 429; *Davidson, S. F.* x, p. 295; *Barnes, Birds Bomb.* p. 95; *Swinhoe & Barnes, Ibis*, 1885, p. 61; *Dresser, Mon. Mer.* p. 63, pl. xvi; *St. John, Ibis*, 1889, p. 157; *Oates in Hume's N. & E.* 2nd ed. iii, p. 65; *Sharpe, Cat. B. M.* xvii, p. 66.

Merops ægyptius, *Forsk. Descr. An., Aves*, p. 1 (1775); *Horsf. & M. Cat.* i, p. 89; *Jerdon, B. I.* i, p. 209; *G. F. L. Marshall, Ibis*, 1872, p. 203; *Hume, S. F.* i. p. 167; iii, p. 326; *Adam, S. F.* i, p. 371; *Butler, S. F.* iii, p. 456; vii, p. 181.

The Egyptian Bee-eater, Jerdon.

Coloration. Very similar to *M. philippinus*, but greener. Forehead white, passing into verditer-blue, which unites the long blue supercilia; a black streak through the lores past the eye to the ear-coverts, bordered below by white, passing down into blue and then into green on the cheeks; upper parts and wings green, bluer on the rump and upper tail-coverts; quills greenish rufous, tipped blackish; tail-feathers also rufescent green, the long median pair dusky at the tips; chin yellow, throat chestnut, rest of lower parts green like the back; wing-lining brownish rufous.

Bill black; iris red; legs and feet fleshy (*C. T. Bingham*).

Length about 12; tail 5 to 6, to end of outer rectrices 3·7; wing 6; tarsus ·55; bill from gape 1·75.

Distribution. Migratory, wintering in Africa, and passing the summer in Western and Central Asia. A summer visitant to North-western India, breeding in parts of Sind, Rajputana, the Punjab, and Afghanistan, and ranging occasionally during migration as far as Gilgit, Aligarh and Mainpuri in the N.W. Provinces, Mhow, Khandesh, and even Pandharpur in the Bombay Deccan, where Mr. Davidson obtained a young specimen in October. This species has not, so far as I know, been observed in Kashmir proper.

Habits, &c. Similar to those of other Bee-eaters. This species breeds near Delhi, as observed by Bingham, from the middle of May to the middle of July, and lays 3 to 5 eggs in the usual nest-hole. The eggs measure on an average ·95 by ·81.

1029. **Merops apiaster.** *The European Bee-eater.*

Merops apiaster, *Linn. Syst. Nat.* i, p. 182 (1766); *Blyth, Cat.* p. 52; *Adams, P. Z. S.* 1858, p. 474; *Jerdon, B. I.* i, p. 210; *id. Ibis*, 1872, p. 3; *Murray, S. F.* vii, p. 113; *Hume, Cat.* no. 121; *Wardl.-Ramsay, Ibis*, 1880, p. 49; *Barnes, S. F.* ix, pp. 215, 453; *Biddulph, Ibis*, 1881, p. 48; *Barnes, Birds Bom.* p. 95; *St. John, Ibis*, 1889, p. 157; *Oates in Hume's N. & E.* 2nd ed. iii, p. 66; *Sharpe, Cat. B. M.* xvii, p. 63.

Coloration. Forehead white, followed by an indistinct line of verditer-blue passing into green, that is continued on each side as a supercilium; a black line including the lores and ear-coverts and passing under the eye; crown, hind neck, and upper back chestnut, darkest on the head and passing into pale yellowish brown, weathering in worn plumage to buff on the lower back and rump, paler still on the scapulars; secondary-coverts and quills chestnut; primary-coverts and primary and tertiary quills bluish green, all quills except the tertiaries tipped black; upper tail-coverts bluish green; tail-feathers bronze-green above, the slightly elongate median pair tipped black, all blackish beneath; chin and throat rich yellow, followed by a black gorget; breast, abdomen, and under tail-coverts greenish blue, paler behind; wing-lining buff.

Bill black; iris red; legs and feet brown.

Length about 10·5; tail 4 to 5, outer rectrices 3·5; wing 5·75; tarsus ·55; bill from gape 1·7.

Distribution. A migratory bird, wintering in Africa, and perhaps in Southern Arabia, and breeding in summer in Southern Europe and Central Asia. Within Indian limits this Bee-eater breeds in Kashmir and probably in Afghanistan, and has been observed when migrating in the N.W. Punjab, Baluchistan, and on one occasion in Sind.

Habits, &c. Those of the genus. This and other large Bee-eaters keep more on the wing than *M. viridis* and feed on various insects, chiefly bees and wasps. *M. apiaster* breeds in Kashmir during May and June, and lays 4 to 7 eggs (6 being a common number) in a chamber at the end of a deep hole. The eggs are white and glossy, and measure about 1·08 by ·9.

Genus **MELITTOPHAGUS**, Boie, 1828.

This genus contains one Indian species, other kinds being found throughout the Ethiopian region, whilst one, *M. quinticolor*, inhabits Java. The only distinction from *Merops* is that the middle pair of tail-feathers are no longer than the other rectrices. Plumage and habits are similar to those of *Merops*, and the two types are scarcely worth separating.

1030. **Melittophagus swinhoii.** *The Chestnut-headed Bee-eater.*

Merops erythrocephalus ?, *Gm. Syst. Nat.* i, p. 463 (1778) ; *Blyth, Cat.* p. 53 ; *Blyth & Wald. Birds Burma*, p. 72.

Merops quinticolor, *apud Horsf. & M. Cat.* p. 88 ; *Jerdon, B. I.* i, p. 208 ; *Beavan, Ibis*, 1867, p. 318 ; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 266 ; *Holdsw. P. Z. S.* 1872, p. 423 ; *Jerdon, Ibis*, 1872, p. 3 ; *Walden, Ibis*, 1873, p. 301 ; *Davidson, Jour. Bomb. N. H. Soc.* vi, p. 332 (*nec V.*).

Merops swinhoei, *Hume, N. & E.* p. 102 (1873) ; *id. S. F.* ii, p. 163 ; vii, p. 455 ; xi, p. 42 ; *id. Cat.* no. 119 ; *Ball, S. F.* ii, p. 386 ; vii, p. 203 ; *Fairb. S. F.* iv, p. 254 ; *Armstrong, ibid.* p. 305 ; *Legge, Birds Ceyl.* p. 312 ; *Parker, S. F.* ix, p. 478 ; *Davison, S. F.* x, p. 350 ; *Barnes, Birds Bom.* p. 95.

Merops leschenaultii, *apud Fairb. S. F.* v, p. 394 ; *Anders. Yunnan Exped., Aves*, p. 582 ; *Hume & Dav. S. F.* vi, p. 68 (*nec V.*).

Melittophagus leschenaulti, *apud Oates, B. B.* ii, p. 68.

Melittophagus quinticolor, *apud Dresser, Mon. Mer.* p. 115, pl. xxvi ; *Oates in Hume's N. & E.* 2nd ed. iii. p. 67.

Melittophagus swinhoii, *Sharpe, Cat. B. M.* xvii, p. 55.

Kurumenne Kurulla, Pook-Kira, Cingalese.

Coloration. Whole crown with the ear-coverts, hind neck, and upper back chestnut ; lores and a narrow line running back under the eye and ear-coverts black ; interscapulars, scapulars, and outside of wings bright green ; quills the same, but (the tertiaries excepted) with black tips and rufous inner margins ; rump and upper tail-coverts pale blue ; tail-feathers green above, all except the median pair dusky on their margins and tips ; chin and throat yellow ; a rufous-brown gorget joining the chestnut of the upper surface, and bordered behind with black not extending to the sides of the neck, but succeeded by an ill-defined yellow band ;

breast green, passing into bluish green on the abdomen and lower tail-coverts.

Bill black; iris crimson; legs dusky black (*Oates*).

Length 8·5; tail 4; wing 4·2; tarsus ·43; bill from gape 1·7.

After going over the original descriptions, I believe the true *Merops quinticolor* to be the Javan species. *M. leschenaulti* is not recognizable. Vieillot appears merely to have copied Levaillant's descriptions and localities, and the latter are notoriously worthless.

Distribution. A resident, locally distributed throughout Ceylon and in the hill-forests near the Malabar coast as far north as Belgaum, ascending the Nilgiris to about 5000 feet. Elsewhere in the Peninsula this bird is only known to occur in the great forest-region south-east of Bengal, and there it is very rare; but Mr. Ball obtained a specimen in Sarguja and I shot one on the Godávari below Sironcha. It ranges throughout the Lower Himalayas as far west as Dehra Dún, and east of the Bay of Bengal from Assam to the Malay Peninsula, Siam, and Cochin China, occurring locally throughout Burma and in the Andaman Islands.

Habits, &c. Similar to those of *Merops*. This bird is usually seen perched on a tree, very often on a dead branch, or catching insects on the wing. It chiefly prefers forests or well-wooded country near streams. It breeds about March and April, generally in colonies, in holes of considerable depth, and lays usually 5 or 6 glossy white eggs in a chamber at the end of the hole. The eggs measure about ·87 by ·76.

Genus **NYCTIORNIS**, Swains., 1831.

Larger than *Merops*; bill stronger and deeper; ridge of the culmen flattened; a hollow on each side of the ridge; nostrils covered by plumes. Wing rounded; first quill about two-thirds of the second, third or fourth longest; tail rather long, even. Feathers of throat and breast elongate and richly coloured.

Only two species are known, both are found within our area.

Key to the Species.

Middle of throat and of breast light blue......	*N. athertoni*, p. 115.
Middle of throat and of breast scarlet	*N. amictus*, p. 117.

1031. **Nyctiornis athertoni.** *The Blue-bearded Bee-eater.*

Merops athertoni, *Jard. & Selby, Ill. Orn.* ii, pl. 58 (1829).

Nyctiornis athertoni, *Horsf. & M. Cat.* p. 89; *Jerdon, B. I.* i, p. 211; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 153; *Blyth & Wald. Birds Burma*, p. 73; *Hume & Inglis, S. F.* v, p. 18; *Fairbank, ibid.* p. 394; *Hume & Dav. S. F.* vi, p. 68; *Hume, S. F.* vii, p. 203; xi, p. 42; *id. Cat.* no. 122; *Anderson, Yunnan Exped., Aves,* p. 583; *Bingham, S. F.* ix, pp. 153, 472; *Butler, ibid.* p. 382; *Davison, S. F.* x, p. 351; *Macgregor, ibid.* p. 436; *Oates, B. B.* ii,

p. 63; *id. in Hume's N. & E.* 2nd ed. iii, p. 58; *Dresser, Mon. Mer.* p. 7, pl. 3; *Barnes, Birds Bom.* p. 96; *Davidson, Jour. Bomb. N. H. Soc.* vi, p. 333; *Sharpe, Cat. B. M.* xvii, p. 88.
Bucia nepalensis, *Hodgson, J. A. S. B.* v, p. 361 (1836).
Merops cyanogularis, *Jerdon, Mad. Jour. L. S.* xi, p. 229 (1840).
Alcemerops athertonii, *Blyth, Cat.* p. 52.

The Blue-necked Bee-eater, Jerdon; *Bukay Chera,* Nepal; *Sang-rhyok,* Lepcha; *Pya-too-huet,* Burmese.

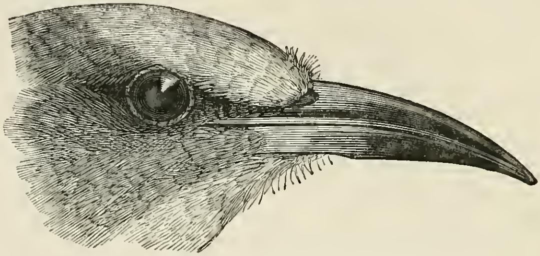

Fig. 32.—Head of *N. athertoni.*

Coloration. Forehead, sometimes to vertex, pale verditer-blue; whole upper parts, with sides of neck and breast and upper surface of wings and tail, grass-green; chin, middle of throat and of upper breast, forming a broad line, light blue, the long breast-feathers deep verditer except at the margins; lower surface from breast, including the wing-lining, ochreous buff, streaked with broad green shaft-stripes from breast to vent; tail-feathers dull ochreous yellow beneath, their outer margins and tips blackish.

Bill horny, light at the base below; iris brown; legs fleshy brown, tinged with green (*Oates*).

Length 14; tail 5·25; wing 5·8; tarsus ·7; bill from gape 2·3. The female somewhat less.

Distribution. Resident throughout the Lower Himalayas as far west as Dehra Dún, from the plains to about 4000 feet, also from Assam to Tenasserim, Siam, and Cambodia, throughout the Burmese countries, in the larger forests. This Bee-eater is replaced in Southern Tenasserim by the next species, but it is found in the Malabar forests from the neighbourhood of Belgaum to Travancore. The only other reported occurrence in the Peninsula of India is at Sambalpur, whence there are two skins in the Hume Collection. Not known in Ceylon.

Habits, &c. A forest-bird, usually seen solitary or in pairs, perching on high trees, and capturing insects on the wing. The eggs were obtained by Major Bingham in Tenasserim from a hole 7 feet deep in the bank of a stream on April 23rd; they were four in number, hard-set, nearly round, white and glossy, and measured about 1·14 by 1·03. Several similar nests and eggs were taken by Mr. Davidson in Kanara at the end of March, and by Mr. E. C. Steuart Baker in Cachar from March till June. It was long supposed, doubtless erroneously, that this bird might breed in holes of trees.

1032. **Nyctiornis amictus.** *The Red-bearded Bee-eater.*

Merops amictus, *Temm. Pl. Col.* pl. 310 (1824).
Nyctiornis amicta, *Swains. Zool. Ill.* ser. 2, ii, text to pl. 56; *Horsf. & M. Cat.* p. 383; *Blyth, Ibis*, 1866, p. 345; *Blyth & Wald. Birds Burm.* p. 73; *Hume & Dav. S. F.* vi, pp. 69, 498; *Hume, Cat.* no. 122 bis; *Bingham, S. F.* viii, p. 193; ix, p. 153; *Oates, B. B.* ii, p. 64; *Dresser, Mon. Mer.* p. 1, pls. 1, 2; *Sharpe, Cat. B. M.* xvii, p. 90.
Alcemerops amicta, *Blyth, Cat.* p. 52.
Nyctiornis malaccenis, *Cab. & Heine, Mus. Hein.* ii, p. 133 (1859); *Hume, S. F.* ii, p. 469.

Coloration. Nasal plumes and point of chin pale verditer-green; lores and forehead pink, passing into lilac on the vertex; feathers on eyelids dark green or blue; whole upper parts, including ear-coverts, sides of neck and breast, and upper surface of wings and tail, grass-green; cheeks in front of eye, throat, and elongate plumes in middle of breast scarlet, the latter dark green near the shafts; lower parts from breast pale green; tail-feathers beneath ochreous yellow, with broad black tips; exterior margin of outermost feathers also black; wing-lining ochreous buff.

In the *female* the forehead and lores are scarlet like the throat; vertex only pink. Young birds are green throughout.

Bill black, whitish at base; iris bright yellow to orange; legs and feet pale green, often dingy, sometimes bluish (*Davison*).

Length 13; tail 5; wing 5·25; tarsus ·6; bill from gape 2·45. Females measure rather less and have a shorter bill.

Distribution. Tenasserim and throughout the Malay Peninsula to Sumatra and Borneo. In Tenasserim this bird is found as far north as Moulmein, Myawadi, and the Thoungyeng valley, but is rare north of Yay.

Habits, &c. Similar to those of *N. athertoni.* The note, according to Davison, is hoarse, of four syllables, and uttered at irregular intervals. Nidification not known.

Suborder *HALCYONES.*

No cæca; oil-gland tufted; 15 cervical vertebræ. Sternum with four notches on the posterior margin; manubrium simple, composed of the spina externa only. Both carotids are present. Spinal feather-tract well defined on the neck and not forked on the back, so there is no dorsal apterium. Down present in adults on the tracts not covered by feathers, a character absent in other suborders of Anisodactyli. No accessory semitendinosus muscle. The two plantar tendons are generally united, but the slip leading to the hallux branches off from the *flexor perforans digitorum* above the junction as in *Meropes*. In some cases however, as in *Dacelo*, this slip unites with the *flexor longus hallucis*, and the latter runs to the fourth digit only and has no other connexion with the *f. perf. digitorum* (Gadow in Newton's Dictionary of Birds, p. 617).

Family ALCEDINIDÆ.

Bill long, stout, pointed, with a rounded or slightly flattened culmen; tarsus and toes feeble; the fourth or outer toe united to the third for more than half its length, third and second united for basal third.

Primaries 11, the first minute. Tail-feathers 12 (except in *Tanysiptera*, which has 10).

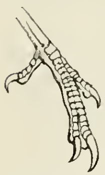

Fig. 33. Right foot of *A. ispida*, $\frac{1}{1}$.

All Kingfishers lay white, glossy, rather round eggs, very like those of Bee-eaters, almost always in a chamber without lining, dug by the birds in the earth at the end of a burrow from 6 inches to several feet in length. There is sometimes, but rarely, a layer of fish-bones on which the eggs are deposited.

This family is generally divided into two subfamilies, but as Dr. Bowdler Sharpe, to whom we are indebted for an excellent monograph of the Kingfishers, has shown, the distinction between the two is not well marked.

Key to the Genera.

a. Plumage (of Indian species) black and white.	Ceryle, p. 119.
b. Plumage varied, not black and white.	
a'. Tail shorter than culmen.	
a''. Toes 4	Alcedo, p. 122.
b''. Toes 3	Ceyx, p. 127.

b'. Tail longer than culmen.
c''. Sexes alike.
a^3. Bill red.
a^4. Bill compressed, culmen flattened, with a groove on each side ...... PELARGOPSIS, p. 128.
b^4. Bill not compressed, culmen rounded.
a^5. Primaries white at base .... HALCYON, p. 131.
b^5. No white on primaries .... CALLIALCYON, p. 134.
b^3. Bill black .... SAUROPATIS, p. 135.
d''. Sexes dissimilar; bill somewhat depressed.
c^3. Bill black above; plumage not barred. CARIDAGRUS, p. 138.
d^3. Bill red throughout; plumage barred. CARCINEUTES, p. 138.

Genus **CERYLE**, Boie, 1828.

Bill long, compressed; culmen slightly curved, flattened or rounded above, with a groove on each side. Wings rather pointed, 2nd or 3rd quill longest, 1st but little shorter. Tail longer than culmen.

This genus inhabits the Ethiopian and Oriental regions with the Southern portion of the Palæarctic and the whole of America. There are two Indian species, distinguished by their black and white plumage.

Key to the Species.

Back not barred; wing 5·5 .... *C. varia*, p. 119.
Back transversely barred; wing over 7 .... *C. lugubris*, p. 121.

1033. **Ceryle varia.** *The Indian Pied Kingfisher.*

Ceryle varia, *Strickland, A. M. N. H.* vi, p. 418 (1841); *Salvad. Ann. Mus. Civ. Gen.* (2) iv, p. 585; *Sharpe, Cat. B. M.* xvii, p. 112.

Ceryle rudis, *apud Blyth, Cat.* p. 49; *Horsf. & M. Cat.* p. 131; *Jerdon, B. I.* i, p. 232; *Sharpe, Mon. Alc.* p. 61, pl. 19; *Hume & Henders. Lah. to Yark.* p. 179; *Hume, S. F.* i, p. 170; iii, p. 52; xi, p. 47; *id. Cat.* no. 136; *Blyth & Wald. Birds Burm.* p. 71; *Hume & Dav. S. F.* vi, p. 85; *Legge, Birds Ceyl.* p. 288; *Anders. Yunnan Exped., Aves*, p. 580; *Oates, B. B.* ii, p. 77; *id. in Hume's N. & E.* 2nd ed. iii, p. 8; *Murray, Vert. Zool. Sind*, p. 112; *Barnes, Birds Bom.* p. 103; (*nec* Alcedo rudis, *Linn.*).

Koryala-Kilkila, H.; *Phatka Mach ranga, Karikata*, Beng.; *Ung-ta-brik*, Lepcha; *Pelihuduwa Waturanuwa, Gomera Pelihuduwa*, Cing.; *Pane-nyin, Bu-dau-nen-jo*, Burm.

Coloration. Male. Crown, nape, and small nuchal crest black, sparingly streaked with white; lores and a long supercilium white, a black eye-streak from the base of the bill to the ear-coverts, connected by a narrow black line with the black gorget; an imperfect white collar; back, scapulars, and wing-coverts black edged with white; rump-feathers white, with large black spots; primaries with outer web and terminal portion of inner black, the rest white; secondaries white, with irregular black markings forming imperfect bars; tail-feathers white on the basal half and on the tip, a broad black band occupying the greater part of the distal half; lower parts, with cheeks and wing-lining, white; some small elongate spots forming a malar patch; two gorgets, the upper the broader, on the breast, and spots on the flanks forming an imperfect belt, black. There are often black spots on the throat.

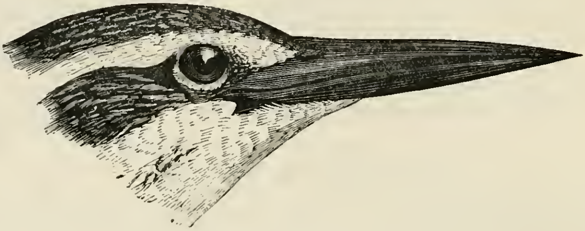

Fig. 34.—Head of *C. varia*, ⅔.

Females want the posterior black gorget and the anterior is interrupted in the middle.

Bill black; iris brown; legs and feet blackish; soles pale (*Legge*).

Length about 11·7; tail 3; wing 5·5; tarsus ·4; bill from gape 3.

The Indian bird has usually been referred to the African and Western Asiatic *C. rudis*; but the latter differs in having the basal half of the tail-feathers more or less spotted with black, the black subterminal bands marked with large white spots, and the black marks on the throat and flanks less developed. The two are, however, only just separable.

Distribution. Common throughout India, Ceylon, and Burma in the plains, wherever there are rivers or large pieces of water, except in Tenasserim south of Amherst. This Kingfisher ranges east to China, but not west of Baluchistan, and does not inhabit the Himalayas, even to the westward, above a very moderate elevation.

Habits, &c. The Pied Kingfisher avoids forest, but is found haunting all waters in open country. It may be seen on tidal streams and creeks, on backwaters and even on the sea-shore, though it is more common inland on rivers, marshes, ditches, and tanks. It lives entirely on fish, for which it never plunges from a fixed perch, but it flies over the water, and hovers with its beak pointed downwards, at a height of frequently 15 or 20 feet above the surface, when it suspects the presence of a fish. It dives for its prey after hovering, but not unfrequently checks itself in its plunge and flies on, uttering from time to time a sharp twittering cry. It breeds from the end of January till April, and lays 4 to 6 white, glossy, broadly oval eggs at the end of a hole usually made in the perpendicular bank of a river. The eggs measure about 1·18 by ·94.

1034. **Ceryle lugubris.** *The Himalayan Pied Kingfisher.*

Alcedo guttatus, *Vigors, P. Z. S.* 1830, p. 22 (*nec Bodd.* 1783).

Alcedo lugubris, *Temm. Pl. Col.* pl. 548 (1834).

Ceryle guttata, *Blyth, Cat.* p. 48; *Horsf. & M. Cat.* p. 132; *Jerdon, B. I.* i, p. 234; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 19; *Sharpe, Mon. Alc.* p. 57, pl. 18; *Jerdon, Ibis,* 1872, p. 4; *Hume, S. F.* ii, p. 470; *id. Cat.* no. 137; *Walden in Blyth's Birds Burm.* p. 71; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 69; xlvii, pt. 2, p. 14; *Hume & Inglis, S. F.* v, p. 19; *Hume & Dav. S. F.* vi, p. 85; *C. H. T. Bingham, S. F.* viii, p. 193; *Oates, B. B.* ii, p. 76; *C. H. T. Marshall, Ibis,* 1884, p. 409; *Hume, S. F.* xi, p. 48; *Oates in Hume's N. & E.* 2nd ed. iii, p. 6.

Ceryle lugubris, *Sharpe, Mon. Alc.* p. 59; *id. Cat. B. M.* xvii, p. 115.

Machi Bágh, H. (Dún.); *Jel butara,* Chamba; *Ung-ka-zhu,* Lepcha.

Coloration. Male. Crown and long nuchal crest, with the sides of the head to some distance below the eyes, black, with white oval spots, that become streaks at the side; a broad white collar; remainder of upper parts greyish black or dark grey, with white bars; quills and tail black, with transversely elongate white spots. Lower parts including cheeks white, a stripe of black spots from the point of the chin down each side of the throat, widening behind and joining a broad gorget of black spots, the wider part and the gorget tinged to a varying extent with brownish rufous that is rarely entirely wanting; flanks, wing-lining, and under tail-feathers barred or spotted with grey or black.

Female. No rufous on throat or gorget; under wing-coverts pale rufous brown.

Bill black, greenish at the base; iris dark brown; legs and feet olive-green.

Length about 16; tail 4·3; wing 7·4; tarsus ·5; bill from gape 3·3.

Distribution. Throughout the Himalayas as far west as Kashmir, and up to an elevation of 7000 feet to the westward, less to the eastward; also in the hills south of Assam, and in the Tenasserim hills, but not, so far as is known, in the intervening country. This species is also found in parts of China and in Japan.

Habits, &c. This Kingfisher is only found on wooded hill-streams, though it follows them in places for some distance into the plains. It generally occurs in pairs. It lives on fish entirely, and usually sits in a bush near the water, keeping in the shade; it swoops upon fish generally from its perch, but according to Mr. Baker, who has given an excellent account of its habits, it sometimes hovers like *C. varia.* The same observer says this bird has two notes, one like that of other Kingfishers, but less quickly repeated, the other a guttural croak which serves as a call. It breeds from April to June, and lays 3 or 4 large white, rounded eggs in a chamber at the end of a hole about 2 feet long.

Genus **ALCEDO**, Linn., 1766.

Back bright blue, head banded black and blue. Bill long, compressed; culmen very slightly curved, the ridge rounded not flattened above, and with a slight groove on each side. Wing somewhat pointed, 3rd or 4th quill longest, 1st and 2nd very little shorter. Tail very short, shorter than the bill and rounded at the end. Feet weak.

A genus of 10 known species, half of which are Indian. The generic range extends throughout Europe, Asia, and Africa.

Key to the Species.

a. Size small; wing 2·5 to 3·2.
  a′. Ear-coverts ferruginous in adults ...... *A. ispida*, p. 122.
  b′. Ear-coverts blue in adults.
    a″. Middle of back pale blue .... *A. beavani*, p. 124.
    b″. Middle of back deep blue .... *A. meninting*, p. 125.
b. Size larger; wing about 3·5.
  c′. No green band across breast.
    c″. Bars on head conspicuous, whitish blue .... *A. grandis*, p. 125.
    d″. Bars on head inconspicuous, dull greenish blue .... *A. euryzona* ♀, p. 126.
  d′. A green band across breast .... *A. euryzona* ♂, p. 126.

1035. **Alcedo ispida.** *The Common Kingfisher.*

Alcedo ispida, *Linn. Syst. Nat.* i, p. 179 (1766); *Sharpe, Mon. Alc.* p. 1, pl. i; *Hume, S. F.* i, p. 168; *id. Cat.* no. 134 bis; *Blanf. East. Pers.* ii, p. 121; *Butler, S. F.* v, p. 208; *Murray, Vert. Zool. Sind*, p. 111; *Barnes, Birds Bom.* p. 102; *Sharpe, Cat. B. M.* xvii, p. 141.

Alcedo bengalensis, *Gm. Syst. Nat.* i, p. 450 (1788); *Blyth, Cat.* p. 49; *Horsf. & M. Cat.* p. 129; *Adams, P. Z. S.* 1858, p. 474; 1859, p. 174; *Jerdon, B. I.* i, p. 230; *Hume & Henders. Lah. to Yark.* p. 178; *Hume, S. F.* i, p. 168; ii, p. 173; xi, p. 46; *id. Cat.* no. 134; *Blyth & Wald. Birds Burm.* p. 71; *Anders. Yunnan Exped., Aves*, p. 580; *Hume & Dav. S. F.* vi, p. 81; *Cripps, S. F.* vii, p. 260; *Legge, Birds Ceyl.* p. 292; *Oates, B. B.* ii, p. 72; *id. in Hume's N. & E.* 2nd ed. iii, p. 1; *Barnes, Birds Bom.* p. 101.

Alcedo sindiana, *Hume, S. F.* i, p. 168.

The Common Indian Kingfisher, Jerdon; *Chota kilkila, Nita* or *Nika machrála*, H.; *Khandú, Khandya*, Mahr.; *Chota-machranga*, B.; *Tint Konu, Tuntu*, Kashmiri; *Ung-chin*, Lepcha; *Nila buche gadu*, Tel.; *Dane-nyin*, Burm.

Coloration. Crown and nape transversely banded dusky black and blue; lores and a band below the eye to the ear-coverts deep ferruginous, ending in a white or rufous-white patch at the side of the neck; lower edge of lores black, a broad stripe from the lower mandible down each cheek blue; middle of back, rump, and upper tail-coverts bright blue; scapulars and wing-coverts greenish blue, each of the lesser and median coverts tipped with a bright blue spot; quills brown, edged outside with greenish blue; tail blue above, brown beneath; lower parts deep ferruginous, sometimes paler, always whitish or white on chin and throat. Some birds are a greener blue than others. Young birds are duller in colour and have the lower parts tinged with ashy.

Bill black; basal half of lower mandible in females red or orange; iris dusky brown; feet coral-red (*Sharpe*).

Length about 7; tail 1·4; wing 2·75 to 3·1; tarsus ·37; bill from gape 1·9.

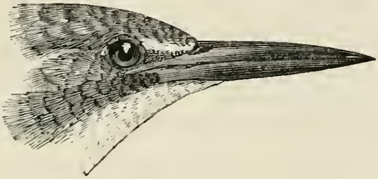

Fig. 35.—Head of *A. ispida*, $\frac{2}{3}$.

In accordance with the latest views of Dr. Bowdler Sharpe, who has made a special study of Kingfishers, I have united the Indian Kingfisher with the European and Central Asiatic bird. The former has long been distinguished as *A. bengalensis*, on account of its small size; but unquestionably the two pass into each other, and the difference in size is probably due to a very common peculiarity that tropical races (or perhaps southern races) in Asia are smaller than those of temperate regions.

Distribution. Throughout Europe and Asia, extending to the Malay Archipelago. In the British Indian area, this bird is only wanting in the Himalayas, where it is rarely met with far above the base of the mountains, though it abounds in Kashmir. It is of course most common in well-watered countries and comparatively rare in forest-tracts. The smaller race *A. bengalensis* occurs throughout South-eastern Asia; the larger, typical *A. ispida* only occurs within Indian limits in Sind and Baluchistan, but intermediate forms are common.

Habits, &c. The Common Kingfisher frequents streams of all sizes, marshes, tanks, irrigation-channels, road-side ditches, flooded paddy-fields, and even the sea-shore, anywhere, in fact, where small fish may be found, and perches on a tree or stump, and very often on a reed, or any post of vantage overlooking the water; from its perch it plunges after its prey. It lives mainly on fish, occasionally on tadpoles or water-insects, but it is rarely, if ever, seen away from water. Very often these little Kingfishers are in pairs and they are exceedingly pugnacious, each pair driving away all others of the same species. It has a peculiar whistling cry or call, frequently uttered. Its flight is very swift and straight, generally just above the surface of the water. It breeds in India from January to June, earlier in the South of India than in the North, but in some parts it breeds at other seasons. It digs in a bank immediately over water, usually a stream, a narrow hole, about 2 feet in depth and rarely more than 2 inches in diameter, terminating in a chamber about 5 inches in diameter and 3 or 4 high, in which 5 to 7 eggs are laid, very often on a few fish-bones. The eggs are white and glossy and measure ·8 by ·68.

1036. **Alcedo beavani.** *Beavan's Kingfisher.*

Alcedo meninting, *apud Beavan, Ibis,* 1867, p. 319; *Blanf. Ibis,* 1870, p. 465; *Oates, S. F.* v, p. 143; *Brooks, S. F.* viii, p. 468; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 584 (*nec Horsf.*).
Alcedo asiatica, *apud Ball, S. F.* i, p. 59; *Hume, S. F.* ii, p. 174; *Ball, S. F.* iii, p. 289; *Blyth & Wald. Birds Burm.* p. 71; *Hume, S. F.* iv, p. 383; *Oates, B. B.* ii, p. 73; *id. in Hume's N. & E.* 2nd ed. iii, p. 6 (*nec Swainson*).
Alcedo rufigastra, *Wald. A. M. N. H.* (4) xii, p. 487 (1873); *id. Ibis,* 1874, p. 136.
Alcedo beavani, *Wald. A. M. N. H.* (4) xiv, p. 158 (1874); *id. Ibis,* 1875, p. 461; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 193; *Hume & Dav. S. F.* vi, pp. 84, 499; *Ball, S. F.* vii, p. 204; *Hume, Cat.* no. 135 quat.; *Hume, S. F.* ix, p. 247; xi, p. 47; *Butler, S. F.* ix, p. 383; *Davison, S. F.* x, p. 351; *Barnes, Birds Bom.* p. 102; *Sharpe, Cat. B. M.* xvii, p. 160.

Coloration. Crown, nape, and hind neck black, with bright blue cross-bands; lores ferruginous, the lower border black; sides of head and cheeks bright blue, an elongate buff or white spot on each side of the neck behind the ear-coverts; middle of back and rump bright light blue, sometimes with a slight greenish tint; upper tail-coverts rather darker blue; scapulars, wing-coverts, and outer margins of secondary quills dull blue, most of the coverts each with a bright blue spot at the tip; quills brown, with the inner margins pale rufous; tail deep blue above, black below; chin and throat buffy white; rest of lower parts, including wing-lining, deep ferruginous.

Adult females resemble males; young birds have the cheeks and ear-coverts rufous, and the blue on these parts appears to be more slowly assumed by females than by males.

Bill black, orange at the gape and base; iris dark brown; legs bright red, claws red. Young birds have most of the lower mandible red and the tip white (*Oates*).

Length about 6·2; tail 1·25; wing 2·5; tarsus ·35; bill from gape 1·8–2·2.

Distribution. This Kingfisher is very rare west of the Bay of Bengal, but has been obtained in Travancore and west of Belgaum near the Malabar coast, also in the Rajmehal Hills, Manbhoom, and Cuttack, and, quite recently, in Ceylon. It is more common at the base of the Himalayas in Sikhim and Bhután, in Assam and Cachar, in various parts of Burma from Bhámo to Southern Tenasserim, and in the Andaman Islands, but it is locally distributed. It has also been brought from Cochin China and Celebes.

Habits, &c. Very similar to those of *A. ispida*, except that this is purely a forest species, being restricted to woodland streams. The eggs, 4 to 6 in number, were taken from the usual nest-holes by Mr. Oates in Pegu in the month of July; they were glossy white and round, and measured about ·78 by ·69.

1037. **Alcedo meninting.** *The Malayan Kingfisher.*

Alcedo meninting, *Horsf. Tr. Linn. Soc.* xiii, p. 172 (1821); *Blyth, Cat.* p. 49; *Horsf. & M. Cat.* p. 130; *Hume & Dav. S. F.* vi, p. 83; *Hume, Cat.* no. 135 ter; *Sharpe, Cat. B. M.* xvii, p. 157.

Alcedo asiatica, *Swains. Zool. Ill.* 1st ser. i, pl. 50 (1821); *Sharpe, Mon. Alc.* p. 23, pl. 5.

Coloration. Precisely similar to that of *A. beavani*, except that the blue of the upper parts is deeper, the spots on the wing-coverts especially being comparatively inconspicuous; and the middle of the back is deep cobalt. Measurements as in *A. beavani.*

I am disposed to agree with Oates and to regard *A. beavani* as merely a bright-coloured variety. Hume was inclined to the same view, and the distribution of the two is anomalous if they are distinct; but when a series of both is laid out, there is a perceptible difference between them.

Distribution. Malay Peninsula, extending into the extreme south of Tenasserim, also in Sumatra, Java, and Borneo.

1038. **Alcedo grandis.** *Blyth's Kingfisher.*

Alcedo grandis, *Blyth, J. A. S. B.* xiv, p. 190 (1845); *id. Cat.* p. 49; *id. Ibis,* 1865, p. 30, 1866, p. 348; *Sharpe, Mon. Alc.* p. 19, pl. 3; *Jerdon, Ibis,* 1872, p. 4; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 69; xlvii, pt. 2, p. 14; *Hume, Cat.* no. 135; *id. S. F.* xi, p. 47; *Oates in Hume's N. & E.* 2nd ed. iii, p. 4; *Sharpe, Cat. B. M.* xvii, p. 156.

Alcedo euryzona, *apud Blyth, Cat., Addenda,* p. xxviii; *Jerdon, B. I.* i, p. 231; *nec Temm.*

The Great Indian Kingfisher, Jerdon.

Coloration. Whole cap and nape black, with small bluish-white transverse bars; a ferruginous spot on the black lores; a pale patch in front of the eye, another behind and below it; cheeks and ear-coverts blackish, spotted and streaked with bright greenish blue; a white longitudinal stripe on each side of the neck; middle of back and rump bright pale blue, becoming deeper blue on the upper tail-coverts; scapulars and wings dull green outside, with some bright bluish-white specks on the coverts; quills brown, some of the secondaries with greenish-blue edges; tail deep blue above, dark brown below; lower parts deep ferruginous, whitish on throat and chin. Sexes, so far as is known, alike.

Bill black, red at the base of the lower mandible; feet red (*Jerdon*).

Length about 8; tail 1·8; wing 3·8; tarsus ·42; bill from gape 2·5.

Distribution. This Kingfisher has only been obtained at low elevations in the Sikhim and Bhután Himalayas, in the Dafla hills east of Bhután, and in some of the hills south of the Assam valley.

Habits, &c. These were unknown until an excellent account of them was given in the 'Asian' newspaper by "Rekab" (Mr. Steuart Baker). He found the bird very shy, keeping to streams in dense jungle, and feeding chiefly or wholly on fish. It is a silent bird, its note, only uttered on the wing, resembling that of *A. ispida*, and its flight is exceedingly rapid. The eggs, taken on three occasions in April, were from 2 to 6 in number, laid on fish-bones at the end of a burrow, varying from 1 to 6 feet in length—in two cases in dark ravines through which a little water trickled in the rains, and in the third on the slope of a hill amongst the roots of a tree.

1039. **Alcedo euryzona.** *The Broad-zoned Kingfisher.*

Alcedo euryzona, *Temm. Pl. Col.* text to pl. 508 (1830); *Horsf. & M. Cat.* p. 128; *Sharpe, Mon. Alc.* p. 29, pl. 8; *Hume, S. F.* iii, p. 318; *Oates, B. B.* ii, p. 75; *Sharpe, Cat. B. M.* xvii, p. 154.

Alcedo nigricans, *Blyth, J. A. S. B.* xvi, p. 1180 (1847); *id. Cat.* p. 49; *Hume & Dav. S. F.* vi, pp. 81, 499; *Hume, Cat.* no. 135 bis; *Bingham, S. F.* ix, p. 156.

Coloration. Male. Crown and nape sooty black, with narrow faint greenish bars; lores dull ferruginous; cheeks and ear-coverts bluish black, mixed with dull green; a ferruginous or whitish band on each side of the neck, forming an imperfect collar; middle of back and rump very pale blue, upper tail-coverts deeper blue; scapulars and wings sooty black, the scapulars and coverts tipped and the inner quills edged near the base with greenish blue; tail black, washed above with dark blue; lower parts buffy white, a broad band of dull green across the breast, the feathers with white centres; flanks dusky; wing-lining rufescent.

Female. Lower parts ferruginous, chin and throat whitish; no band across breast; upper parts as in males.

Upper mandible black, lower very dark brown, paler at the base in males, dull vermilion in females; iris dark brown; feet milion (*Davison*).

Length about 8; tail 1·5; wing 3·4; tarsus ·48; bill from gape 2·4.

Distribution. Tenasserim, as far north as Muleyit east of Moulmein, also in the Malay Peninsula, Sumatra, Java, and Borneo.

Habits, &c. This is a rare and shy bird, found only on streams in deep forest, and apparently restricted in Tenasserim to the hills. It is generally seen in pairs, lives entirely, so far as is known, on fish, and has a note similar to that of *A. ispida.*

Genus **CEYX**, Lacépède, 1801.

Bill intermediate in form between *Alcedo* and *Halcyon*, less compressed than in the former, not grooved; culmen straight and slightly flattened. Only three toes, the inner or second wanting. Tail very short and rounded. Plumage very bright, red often predominating.

This is a genus of 18 species, ranging almost throughout the Oriental region and to the Papuan Islands. One species is Indian.

1040. **Ceyx tridactyla.** *The Indian Three-toed Kingfisher.*

Alcedo tridactyla, *Pallas, Spic. Zool.* vi, p. 10, pl. ii, fig. 1 (1769).
Alcedo erithaca *et* purpurea, *Gm. Syst. Nat.* i, p. 449 (1788).
Ceyx tridactyla, *Jerdon, Ill. Ind. Orn.* pl. 25; *id. B. I.* i, p. 229; *Horsf. & M. Cat.* p. 391; *Layard, A. M. N. H.* (2) xii, p. 172; *Sharpe, Mon. Alc.* p. 119, pl. 40; *Hume, S. F.* ii, p. 173; iii, p. 51; iv, p. 287; v, p. 19; xi, p. 45; *id. Cat.* no. 133; *Butler, S. F.* ii, p. 455; v, p. 503; ix, p. 383; *Walden, Ibis,* 1874, p. 137; *Blyth & Wald. Birds Burm.* p. 71; *Hume & Dav. S. F.* vi, pp. 80, 499; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 14; *Legge, Birds Ceyl.* p. 303; *Bingham, S. F.* viii, p. 193; ix, p. 155; *Parker, S. F.* ix, p. 478; *Oates, B. B.* ii, p. 80; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 587; vii, p. 433; *Barnes, Birds Bom.* p. 101; *Oates in Hume's N. & E.* 2nd ed. iii, p. 13; *Sharpe, Cat. B. M.* xvii, p. 174.
Ceyx microsoma, *Burton, P. Z. S.* 1837, p. 89.
Ceyx erythaca, *Blyth, Cat.* p. 50.

The Three-toed Purple Kingfisher, Jerdon; *Dein-nygeen,* Arrakan; *Punchi Mal-pelihuduwa,* Cing.

Coloration. A spot, pointed behind, at base of forehead black, washed with purple; crown, nape, hind neck, lower back, rump, and upper tail-coverts orange-red, with a ruddy violet gloss, especially over the eye and on the rump and upper tail-coverts; a black spot before the eye; lores, cheeks, ear-coverts, and lower parts from the throat orange-yellow; chin and throat white; a deep blue spot behind the ear-coverts bordered behind by white; scapulars and interscapulary region deep purplish blue; wing dark brown outside, coverts tinged with deep blue; edge of wing and smallest coverts, under wing-coverts, outer edge of first primary, and inner borders of all quills rufous; tail orange-red.

Bill and feet bright vermilion-red; irides brown (*Davison*). In the young the bill is paler and shorter.

Length about 5·5; tail 1; wing 2·2; tarsus ·3; bill from gape 1·55.

Distribution. Ceylon, rare; Carnatic and west coast of Southern India according to Jerdon, but very rare; also some of the Sahyádri forests near Bombay. I find no other localities recorded in the Indian Peninsula, but Jerdon says this species is scattered, though far from common, over all India. To the eastward this Kingfisher is found in Lower Bengal, the Sikhim and Bhután

Terai, Assam, Cachar, and the Burmese countries generally, with the Malay Peninsula, and the Andaman and Nicobar Islands.

Habits, &c. A forest bird, usually found singly or in pairs by hill-streams, but sometimes away from water. It has a shrill piping note, and its food, so far as is known, consists of small fish perhaps also of water-insects. It breeds from May to August, often away from water, in a hole dug by itself, and it lays 4 to 6, or even 7, very small white eggs, less rounded than those of *Alcedinidæ* in general.

Genus **PELARGOPSIS**, Gloger, 1842.

Size large; back and rump pale blue, lower parts buff. Bill very large and strong; culmen flattened, perfectly straight, with a well-marked groove on each side. Third or fourth quill longest, first about equal to tenth. Tail much longer than bill, slightly rounded at the end.

This genus ranges throughout the Oriental region; three species occur within the Indian area.

Key to the Species.

a. Wings and tail brown	*P. amauroptera*, p. 128.
b. Wings and tail blue or greenish blue.	
a'. No distinct brown cap; mantle blue	*P. leucocephala*, p. 129.
b'. A distinct brown cap; mantle dull green.	*P. gurial*, p. 129.

1041. **Pelargopsis amauroptera.** *The Brown-winged Kingfisher.*

Halcyon amauropterus, *Pearson, J. A. S. B.* x, p. 635 (1841); *Blyth, Cat.* p. 313; *Horsf. & M. Cat.* p. 124; *Jerdon, B. I.* i, p. 224; *Blanf. Ibis,* 1870, p. 465; *Cripps, S. F.* vii, p. 260.

Pelargopsis amauroptera, *Sharpe, P. Z. S.* 1870, p. 63; *id. Mon. Alc.* p. 97, pl. 30; *Blyth & Wald. Birds Burm.* p. 70; *Armstrong, S. F.* iv, p. 305; *Hume & Dav. S. F.* vi, p. 73; *Hume, Cat.* no. 128; *Oates, B. B.* ii, p. 78; *Sharpe, Cat. B. M.* xvii, p. 97.

Coloration. Whole head, neck, and lower parts, including wing-lining, deep ochreous buff (brownish yellow); middle of back and rump bright pale blue; a narrow band across the upper back, scapulars, wings, upper tail-coverts, and tail dark brown. In young birds there are dusky edges to the buff feathers, especially on the hind neck and breast.

Bill deep crimson; irides brown; eyelids brick-red; legs scarlet (*Cripps*). The bill is black at the tip and for some distance up the culmen in immature birds.

Length about 14 inches; tail 4; wing 5·8; tarsus ·7; bill from gape 3·75.

Distribution. On tidal rivers and creeks, brackish or salt, near the coast, from Bengal to a little south of Tenasserim; also occasionally, but rarely, near rivers above the tideway.

Habits, &c. This Kingfisher is generally seen on salt-water creeks. It is a noisy bird with a harsh grating cry. Nidification unknown.

1042. **Pelargopsis leucocephala.** *The Nicobar Stork-billed Kingfisher.*

Alcedo leucocephala, *Gm. Syst. Nat.* i, p. 456 (1788).
Pelargopsis leucocephala, *Sharpe, P. Z. S.* 1870, p. 64; *id. Mon. Alc.* p. 99, pl. 31.
Pelargopsis fraseri, *Ball, S. F.* i, p. 57; *nec Sharpe.*
Pelargopsis intermedia, *Hume, S. F.* ii, p. 166 (1874); *id. Cat.* no. 127 ter; *Sharpe, S. F.* ii, p. 489; *id. Cat. B. M.* xvii, p. 99.

Coloration. Whole head, neck, and lower parts, including wing-lining, deep ochreous (brownish yellow); the crown spotted irregularly with brown from some of the feathers having dark brown centres, but there is no distinct cap; upper back, scapulars, wings above, longer upper tail-coverts, and tail above deep blue, slightly greenish on the upper back, scapulars, and wing-coverts; primaries, except the outer webs near the base, inner webs of secondaries, and lower surface of quills and tail-feathers dark brown; middle of back, rump, and anterior upper tail-coverts bright pale cobalt-blue.

Bill coral-red, dusky towards the tip; irides deep brown; orbital skin and feet bright orange-vermilion (*Davison*).

Length about 15; tail 4; wing 6; tarsus ·65; bill from gape 3·75.

Distribution. Borneo and the Nicobar Islands. Specimens from the latter were distinguished by Hume under the name *P. intermedia* on account of being deeper in colour, especially on the back, and wanting the whitish throat. I find, however, that fine Bornean skins are not distinguishable.

Habits, &c. A salt-water form, occasionally seen on the sea-shore, and haunting tidal creeks like *P. amauroptera.* Nidification unknown.

1043. **Pelargopsis gurial.** *The Brown-headed Stork-billed Kingfisher.*

Halcyon capensis, *Jerdon, Madr. Jour. L. S.* xi, p. 231; *Layard, A. M. N. H.* (2) xii, p. 171; *nec L.*
Halcyon gurial, *Pearson, J. A. S. B.* x, p. 632 (1841); *Blyth, Cat.* p. 47; *id. Ibis,* 1865, p. 30; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 95.
Halcyon bruniceps, *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 143 (1845).
Halcyon leucocephalus, *Horsf. & M. Cat.* p. 123 (partim); *Jerdon, B. I.* i, p. 222; *McMaster, J. A. S. B.* xl, pt. 2, p. 108; *nec Gm.*
Halcyon capensis, *Walden, P. Z. S.* 1866, p. 553; *nec L.*
Pelargopsis gurial, *Sharpe, P. Z. S.* 1870, p. 66; *id. Mon. Alc.* p. 105, pl. 34; *Ball, S. F.* ii, p. 386; vii, p. 203; *Fairb. S. F.* iv, p. 254; v, p. 394; *Hume, S. F.* v, p. 18; xi, p. 44; *id. Cat.* no. 127; *Cripps, S. F.* vii, p. 259; *Legge, Birds Ceyl.* p. 295; *Vidal, S. F.* ix, p. 49; *Reid, S. F.* x, p. 21; *Davidson, ibid.* p. 296; *Davison, ibid.* p. 351; *Barnes, Birds Bom.* p. 98; *Littledale, Jour. Bom.*

N. H. Soc. i, pp. 32, 197; *Oates in Hume's N. & E.* 2nd ed. iii, p. 11; *Sharpe, Cat. B. M.* xvii, p. 101.

Pelargopsis burmanica, *Sharpe, P. Z. S.* 1870, p. 67; *id. Mon. Alc.* p. 109, pl. 35; *Ball, J. A. S. B.* xli, pt. 2, p. 277; *id. S. F.* i, p. 57; *Walden, Ibis,* 1874, p. 136; *Hume, S. F.* ii, p. 165; iii, p. 50; *id. Cat.* no. 127 bis; *Blyth & Wald. Birds Burm.* p. 70; *Bingham, S. F.* v, p. 83; ix, p. 154; *Hume & Dav. S. F.* vi, p. 73; *Oates, B. B.* ii, p. 78; *id. in Hume's N. & E.* 2nd ed. iii, p. 12; *Sharpe, Cat. B. M.* xvii, p. 104.

The Brown-headed Kingfisher, Jerdon; *Gurial* Beng.; *Badami Kowrilla,* H. (Oude); *Maha pelihuduwa, Waturanuwa,* Cing.; *Hsin-paynyin,* Burm.

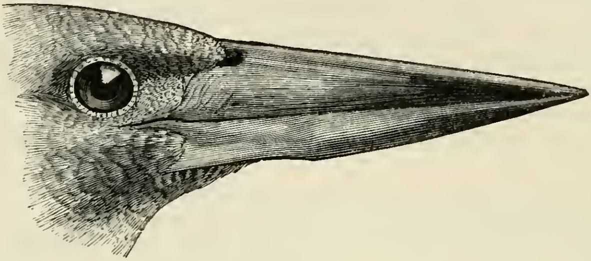

Fig. 36.—Head of *P. gurial*, ⅔.

Coloration. Crown, nape, and sides of head, including the cheeks and ear-coverts, brown, varying in shade from dark brown to (in some Burmese birds) whity-brown; neck all round and lower parts, including wing-lining, varying from buff to deep brownish yellow, usually deeper on the breast and abdomen; upper back, scapulars, wings, longer tail-coverts, and tail dull greenish blue; quills and tail bluer; primaries except outer webs towards the base, inner webs of secondaries, and lower surface of tail brown; back, rump, and shorter tail-coverts bright pale blue.

In young birds the buff feathers of the neck and breast have dark edges; the end of the bill, too, is dusky.

Bill dark blood-red; irides light brown; legs dull scarlet (*Jerdon*). Eyelids pinkish fleshy, the edges red (*Oates*).

Length about 15; tail 4; wing 6; tarsus ·75; bill from gape 3·8.

The Burmese race has been distinguished as *P. burmanica.* Very many Burmese specimens have pale whity-brown caps and dark ochraceous lower parts, but birds in abundance occur throughout Burma that are absolutely undistinguishable from many Indian individuals. Very dark-headed birds are peculiar to India (the darkest are from the Malabar coast), but they are not a majority. The two races are not, I think, sufficiently distinct to be classed apart.

Distribution. Along rivers and streams and about large pieces of water in well-wooded countries almost throughout the Empire.

Wanting in Rajputana, Sind, and the Punjab, and very rare in the open tracts of the North-west Provinces and Central India, on the Deccan tableland, and in the Carnatic; but occurring in Guzerat and throughout the Malabar coast and in Ceylon, in the wooded country between the Godávari and Bengal, near the base of the Himalayas as far west as Dehra Dún, and, still more commonly, in Bengal, Assam, Burma, and the Andaman Islands. This Kingfisher ranges into the northern part of the Malay Peninsula, and to Siam, Cambodia, and Cochin China. Farther south in the Malay Peninsula it is represented by another race, *P. fraseri*.

Habits, &c. Unlike the last two, this is chiefly a freshwater Kingfisher, though it may occasionally be seen on tidal streams. It is more often found on well-wooded rivers, large marshes, or tanks, perched on a branch overhanging the water, and plunging occasionally for fish. It also feeds on frogs, crabs, and it is said mollusca. According to Davison, it sometimes eats lizards. It has a loud peculiar cry several times repeated, generally uttered during flight. It breeds from April to June in Northern India, earlier in the South, generally in a hole in the bank of a stream; but Mr. Cripps in Assam found a nest in a dead and rotten tree, and Major Bingham in Tenasserim obtained the eggs from a nest of grass-roots in the fork of a bamboo, and saw the parent bird distinctly. The eggs, 3 to 5 in number, are of the usual Kingfisher type, and measure about 1·17 by 1·05.

Genus **HALCYON**, Swainson, 1820.

There is much difference of opinion as to the limits of the present genus. In the British Museum Catalogue it comprises the forms here referred to *Callialcyon*, *Sauropatis*, and *Caridagrus*, and contains 53 species, whilst by many writers it is restricted to the type *H. senegalensis* and its allies. I do not see any necessity for generically distinguishing *H. smyrnensis* and *H. pileata* from *H. senegalensis*; but the differences between *Halcyon* and *Sauropatis*, for instance, appear to me quite as great as those usually regarded as of generic importance in the present work.

In *Halcyon* the bill is red throughout, large, rather broad at the base, the culmen straight, rounded above and without any distinct groove at the side. The wing is rounded, the 3rd quill generally longest. Tail moderate, longer than culmen, slightly rounded at the end. One of the characteristic features in the plumage is the presence of a large white patch on the wing formed by the basal portions of the primary quills.

Key to the Species.

Head and neck above chestnut; no white collar.	*H. smyrnensis*, p. 132.
Crown black; a white collar	*H. pileata*, p. 133.

1044. **Halcyon smyrnensis.** *The White-breasted Kingfisher.*

Alcedo smyrnensis, *Linn. Syst. Nat.* i, p. 181 (1766).
Alcedo fusca, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).
Halcyon smyrnensis, *Sykes, P. Z. S.* 1832, p. 84; *Jerdon, Madr. Jour. L. S.* xi, p. 230; *Blyth, Cat.* p. 47; *Sharpe, Mon. Alc.* p. 161, pl. 59; *Hume, S. F.* i, p. 168; ii, p. 167; xi, p. 44; *id. Cat.* no. 129; *Hume & Dav. S. F.* vi, p. 74; *Anderson, Yunnan Exped., Aves*, p. 579; *Legge, Birds Ceyl.* p. 298; *Oates, B. B.* ii, p. 82; *Murray, Vert. Zool. Sind*, p. 110; *Barnes, Birds Bom.* p. 99; *Oates in Hume's N. & E.* 2nd ed. iii, p. 15; *Sharpe, Cat. B. M.* xvii, p. 222.
Halcyon fuscus, *Horsf. & M. Cat.* p. 125; *Jerdon, B. I.* i, p. 224; *Blyth, Ibis*, 1866, p. 347.
Halcyon saturatior, *Hume, S. F.* ii, pp. 168, 531; *id. Cat.* no. 129 bis; *Sharpe, Cat. B. M.* xvii, p. 226.

Kilkila, H.; *Nula muchrála*, Chamba; *Khandu*, *Khandya*, Mahr.; *Sada-búk Machranga*, Beng.; *Lak-muka*, *Buche gadu*, Tel.; *Vichuli*, Tam.; *Kalari Kuruvi*, Tam. (Ceylon); *Pelihuduwa*, Cing.; *Dane-nyin*, Burm.

Coloration. Chin, throat, and middle of breast white, all the rest of head, neck, and lower plumage deep chestnut or chocolate-brown; scapulars and interscapulary tract, tertiaries, outer webs of secondaries above, and upper surface of tail blue, generally with a greenish tinge; lower back, rump, and upper tail-coverts brighter blue; greater wing-coverts duller and darker blue, median coverts black, lesser chestnut; secondary quills except on outer web above black; ends of primaries, much longer on the outer than the inner, black, basal portion white, with the outer web above pale blue.

Bill dark red, the margins brownish; iris brown; legs coral-red (*Oates*).

Length about 11; tail 3·3; wing 4·7; tarsus ·65; bill from gape 2·8.

The Andaman birds were distinguished by Hume as *H. saturatior* on account of their deep coloration, the blue portion of the plumage being a darker blue and the chestnut parts chocolate-brown. The size too is rather large. But similarly coloured individuals, though rare, may be found in India and Ceylon.

Distribution. Throughout India, Burma, and Ceylon, except in the Himalayas, into which this species only penetrates up to a moderate elevation to the westward. It is generally rare or wanting on the higher hills of the Peninsula, though Davison obtained it on the Nilgiri plateau. Outside of India it ranges throughout the Malay Peninsula, Cochin China, &c., to Southern China, and westwards through Persia and Baluchistan to Asia Minor and Cyprus.

Habits, &c. This, like *Alcedo ispida* and *Ceryle varia*, is a common Indian bird, but its habits are very different from those of the other two Kingfishers, for though it occasionally, but rarely, catches fish by plunging after them, it lives chiefly on insects and small lizards, and sometimes on mice or land-crabs. It has a screaming cry, almost always uttered during flight. It breeds from March to July, laying 4 to 7 white rounded eggs in a chamber at the end of the usual burrow, which is generally made in the bank of a stream or tank, sometimes in a well, or on a cliff. In Cachar, however, Mr. E. C. Steuart Baker has described this bird as building a roughly constructed nest of moss amongst rocks or large stones. The eggs measure on an average 1·13 by 1·03.

1045. **Halcyon pileata.** *The Black-capped Kingfisher.*

Alcedo pileata, *Bodd. Tabl. Pl. Enl.* p. 41 (1783).
Alcedo atricapilla, *Gm. Syst. Nat.* i, p. 453 (1788).
Halcyon atricapillus, *Blyth, Cat.* p. 47; *Layard, A. M. N. H.* (2) xii, p. 171; *Horsf. & M. Cat.* p. 124; *Jerdon, B. I.* i, p. 226; *Beavan, Ibis,* 1867, p. 319; 1869, p. 409; *Blanf. Ibis,* 1870, p. 465; *Hume, S. F.* ii, p. 168; iv, p. 287.
Halcyon pileata, *Sharpe, Mon. Alc.* p. 169, pl. 62; *Hume, S. F.* ii, p. 470; xi, p. 45; *id. Cat.* no. 130; *Armstr. S. F.* iv, p. 306; *Blyth & Wald. Birds Burm.* p. 70; *Wardl.-Rams. Ibis,* 1877, p. 456; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 14; *Hume & Dav. S. F.* vi, pp. 74, 499; *Legge, Birds Ceyl.* p. 301; *Bingham, S. F.* viii, p. 193; ix, p. 154; *Vidal, S. F.* ix, p. 49; *Oates, B. B.* ii, p. 83; *Barnes, Birds Bom.* p. 100; *Sharpe, Cat. B. M.* xvii, p. 229.

The Black-capped Purple Kingfisher, Jerdon.

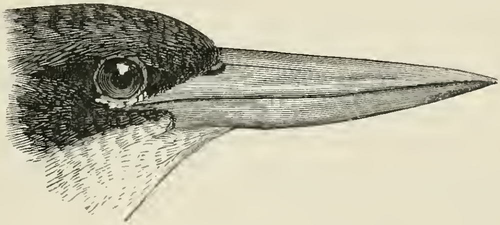

Fig. 37.—Head of *H. pileata,* $\frac{2}{3}$.

Coloration. Crown, nape, and sides of head black, a few white feathers below the eye; a broad white or buff collar round the neck, followed by a blackish band; scapulars, back, rump, upper tail-coverts, upper surface of tail, outer webs of secondaries and tertiaries outside, and greater primary-coverts deep blue, brighter on the lower back and rump; remainder of upper wing-coverts black; primary-quills black at the tips, the first primaries for half their length, the inner primaries for less, basal portion white with the outer web pale lilac, a little of the outer web beyond the lilac part blue, secondaries black except on the dorsal surface of the outer web outside; chin, throat, and middle of breast white; sides of throat and breast and remainder of lower surface, with the wing-lining, ferruginous buff; tail black beneath.

In young birds and in many females the breast-feathers have dark borders, and there are black spots on the sides of the throat.

Bill deep red; iris dark brown; legs dark red (*Oates*).

Length about 12; tail 3·25; wing 5; tarsus ·6; bill from gape 2·8.

Distribution. A single specimen was obtained by Jerdon at Tellicherry, Malabar coast, and another by Layard in Northern Ceylon. The only other known locality in India is on the Ganges, where this Kingfisher has been found as high as Monghyr. It is more common in the Sundarbans and down the Burmese coast, being especially abundant in the Irrawaddy delta. It also occurs in the Andaman and Nicobar Islands. It is seldom found inland, but Oates obtained a specimen on the Irrawaddy at Palow, below Thayet Myo, and it appears, according to Davison and Bingham, to wander up the Tenasserim rivers from September till February. It ranges through the Malay Peninsula and Archipelago to Celebes, also through Siam, Cambodia and China, to Corea.

Habits, &c. This Kingfisher, though chiefly found on salt-water creeks and mangrove-swamps, haunts fresh-water streams at times. It lives on fish and crabs and has, like most Kingfishers, a shrill cry.

Genus **CALLIALCYON**, Bp., 1850.

This genus is distinguished by its peculiar plumage, being rufous throughout except on the lower back and rump. There is no white on the primaries. Otherwise there is no difference from *Halcyon*. A single species.

1046. **Callialcyon lilacina.** *The Ruddy Kingfisher.*

Alcedo coromanda, *Latham, Ind. Orn.* i, p. 252 (1790).

Halcyon coromanda, *Steph. Shaw's Gen. Zool.* xiii, pt. 2, p. 100; *Sharpe, Mon. Alc.* p. 155, p. 57; *Ball, J. A. S. B.* xli, pt. 2, p. 277; *Hume, S. F.* ii, pp. 169, 494; xi, p. 44; *id. Cat.* no. 131; *Blyth & Wald. Birds Burm.* p. 70; *Wardl.-Ramsay, Ibis,* 1877, p. 456; *Hume & Dav. S. F.* vi, p. 75; *Oates, B. B.* ii, p. 81; *Sharpe, Cat. B. M.* xvii, p. 217.

Halcyon lilacina, *Swains. Classif. B.* ii, p. 335 (1837); *Bonap. Consp. Av.* i, p. 156.

Alcyon calipyga, *Hodgs. in Gray's Zool. Misc.* p. 82 (1844), descr. nulla.

Halcyon coromander, *Blyth, Cat.* p. 47.

Halcyon coromandelianus, *Horsf. & M. Cat.* p. 126; *Jerdon, B. I.* i, p. 227.

Callialcyon coromanda, *Walden, Ibis,* 1873, p. 302.

Coloration. Upper parts, with the wing and tail, and sides of the head and neck light chestnut or cinnamon, more or less overlaid with a red-violet gloss; middle of lower back and rump white, mixed with pale blue and occasionally with violet; lower parts rufous, varying in depth, paler on the throat and chin.

Young with dark edges to the breast-feathers.

Bill red, blackish at the base; iris brown; legs and claws red (*Oates*).

Length about 10·25; tail 2·6; wing 4·3; tarsus ·65; bill from gape 2·5.

Skins from the base of the Himalayas and from Burma, even from Tenasserim, are paler above and below, and much less suffused with violet gloss than Andaman specimens, and the latter are rather larger. The difference appears greater than in the case of *H. smyrnensis* and the variety *H. saturatior*. Andaman birds resemble those from the Malay Peninsula and Archipelago (true *H. lilacina*). Indo-Burmese birds are more like Japanese (*H. schlegeli*).

The specific name *coromanda*, although the oldest, cannot be applied to a bird that is not found in the Peninsula of India.

Distribution. Lower Himalayas up to about 5000 feet, in Eastern Nepal, Sikhim, and farther East; Assamese and Burmese countries, generally distributed but rare; also the Andaman and Nicobar Islands, Malay Peninsula, Java, Sumatra, Borneo, Celebes, the Philippines, Eastern China, and Japan.

Habits, &c. A shy bird, generally found in forests and not unfrequently near the coast in mangrove-swamps.

Genus **SAUROPATIS**, Cab., 1860.

Bill shorter and broader than in *Halcyon*, and black not red, above at all events; lower mandible much more curved upwards. Plumage marked by a prevalence of bluish green or greenish blue. Sexes alike. This group is chiefly found in the Malay Archipelago, Australia, and Polynesia, but two species come within our limits.

Key to the Species.

Crown not surrounded by a buff or white band ..	*S. chloris*, p. 135.
Crown surrounded by a buff band inside a black one	*S. occipitalis*, p. 137.

1047. **Sauropatis chloris.** *The White-collared Kingfisher.*

Alcedo chloris, *Bodd. Tabl. Pl. Enl.* p. 49 (1783).
Alcedo collaris, *Scop. Del. Flor. et Faun. Insub.* ii, p. 90 (1786).
Todirhamphus collaris, *Blyth, Cat.* p. 48; *Jerdon, B. I.* i, p. 228; *Walden, P. Z. S.* 1866, p. 554; *Blyth, Ibis*, 1866, p. 221; *Beavan, Ibis*, 1867, p. 319; 1869, p. 409.
Halcyon collaris, *Horsf. & M. Cat.* p. 127.
Sauropatis chloris, *Cab. & Heine, Mus. Hein.* pt. 2, p. 160; *Walden, Ibis*, 1873, p. 302; *Blyth & Wald. Birds Burm.* p. 71; *Salvadori, Ann. Mus. Civ. Gen.* (2), vii, p. 433.
Halcyon chloris, *Sharpe, Mon. Alc.* p. 229, pl. 87; *Ball, S. F.* i, p. 58; *Hume, S. F.* i, p. 451; ii, p. 170; vii, p. 168; *id. Cat.* no. 132; *Armstrong, S. F.* iv, p. 306; *Hume & Dav. S. F.* vi, p. 78; *Vidal, S. F.* viii, p. 414; ix, p. 50; *Oates, B. B.* ii, p. 85; *Barnes, Birds Bom.* p. 100; *Davison, Ibis*, 1885, p. 332; *Sharpe, Cat. B.* xvii, p. 273, pl. vii, fig. 3.

Halcyon armstrongi (*subspecies of* H. chloris), *Sharpe, t. c.* p. 277, pl. vii, fig. 1.
Halcyon vidali (*subsp. of* H. chloris), *Sharpe, t. c.* p. 278.
Halcyon humii (& H. davisoni, *subsp.*), *Sharpe, t. c.* p. 281, pl. viii.

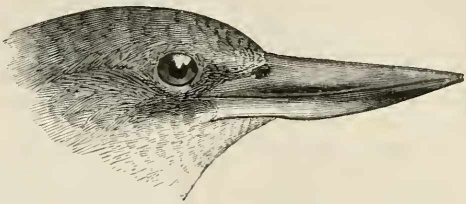

Fig. 38.—Head of *S. chloris*, ⅔.

Coloration. Crown, nape, and sides of head to below the eye bluish green; a white streak above the lores occasionally extending back above the eye; ear-coverts black in some varieties, and with a black band round the nape, separated from the green of the crown by an ill-defined white space (these black and white bands are often entirely wanting); a broad white collar; upper back and scapulars dull bluish green to greenish blue; lower back, rump, and upper tail-coverts bright blue; upper surface of wings and tail deeper blue, sometimes with a greenish tinge; quills, except on outer webs outside, black; lower surface of tail the same; lower parts white, sometimes tinged with buff, especially on the flanks.

Upper mandible, tip and edge of lower mandible greenish black; rest of lower mandible pinkish white; irides deep brown; legs plumbeous (*Davison*).

Length 9·5; tail 2·75; wing 4; tarsus ·6; bill from gape 2·3.

Distribution. Though represented by a variety (*H. abyssinica*) in the Red Sea, this Kingfisher has only been obtained in the Indian Peninsula near Ratnágiri; it is, however, common in the Sundarbans and throughout the eastern coast of the Bay of Bengal, more abundantly to the southward, in the Andaman Islands (it appears to be replaced in the Nicobars by *H. occipitalis*), and throughout the Malay Archipelago to the Philippines and Celebes.

In the British Museum Catalogue Dr. Sharpe has divided this type into several species and subspecies, all the Indian forms of which appear to me to be races varying considerably amongst themselves and passing into each other. These races are:—

H. chloris typical, from the Malay Archipelago, a greenish bird with black ear-coverts and a well-marked black nuchal band.

H. armstrongi: Malay Peninsula, Sumatra, North Borneo, Burmese coast, and Sundarbans. Ear-coverts green, and generally no black nuchal band.

H. vidali, from Ratnágiri, like *H. armstrongi* but greener.

H. humii inhabits the Malay Peninsula with Southern Tenasserim and Sumatra, and is described as a distinct species. It is a very blue form, some birds having scarcely any green tinge on the back even, but others show a complete passage to *H. armstrongi*, which inhabits the same countries. There is no nuchal band.

H. davisoni, the Andaman race, is blue like *H. humii*, but has black ear-coverts and a black nuchal band.

Habits, &c. An inhabitant of sea-shores and of tidal waters, living chiefly on crustacea, but partly on insects, centipedes, small lizards, &c. Hume mentions observing birds of this species hammering shells that contained hermit-crabs against stones in order to break the shells. They are noisy birds. The nest is said to be sometimes made under a stone or bush, but Davison found one in a deserted ants' nest tenanted by hornets (from the description much like a termites' nest, a pile of hard clay against a tree trunk) at Mergui. The eggs are said to measure about 1·4 by 1.

1048. **Sauropatis occipitalis.** *Blyth's White-collared Kingfisher.*

Todiramphus occipitalis, *Blyth, J. A. S. B.* xv, pp. 23, 51, 369; *Ball, J. A. S. B.* xxxix, pt. 2, p. 31.
Todirhamphus collaris, *var. Blyth, Cat.* p. 48.
Halcyon occipitalis, *Pelzeln, Novara Reise, Vögel,* p. 46; *Ball, S. F.* i, p. 58: *Hume, S. F.* ii, p. 171; *id. Cat.* no. 132 bis; *Davison, Ibis,* 1885, p. 332; *Oates in Hume's N. & E.* 2nd ed. iii, p. 19; *Sharpe, Cat. B. M.* xvii, p. 265.

Coloration. Similar to that of *S. chloris*, but the crown is surrounded by a buff rim formed by the lores, supercilia, and a band round the nape; outside this again is a black band, more or less washed with green, especially behind the eyes, and commencing from the eye, including eyes and ear-coverts, and passing round the nape. The lower parts are buff, especially the flanks, wing-lining, abdomen, and lower tail-coverts. As in *S. chloris*, some specimens are greener than others. In young birds the feathers of the white collar and breast have dark edges.

Upper mandible, and the tip and edge of the lower dark horny, rest of lower mandible pinkish; legs and feet pinkish (*Hume*).

Length about 10; tail 2·8; wing 4·25; tarsus ·6; bill from gape 1·7.

Distribution. The Nicobar Islands, where this is a common bird. Its nearest ally, *H. juliæ*, inhabits the New Hebrides.

Habits, &c. Very similar to those of *H. chloris*, but this bird is said by Davison to be more often found in forest. It lives chiefly on lizards and shell-fish. Davison found three nests on Camorta, all in ants' nests of clay, 12 to 30 inches in diameter and 4 to 20 feet from the ground, against trunks of trees. There was a tunnel 6 inches long and 2 or 2½ in diameter, leading to the bird's nest, a chamber 7 inches across. A single egg, obtained from a female that was shot, measured 1·16 by ·98.

Genus **CARIDAGRUS**, Cab., 1860.

Sexes differing in plumage, and one or both spotted. Bill broader and tail shorter than in *Sauropatis.* Two or three species are found in the Philippines, and one, a Malay form, ranges into Southern Tenasserim.

1049. **Caridagrus concretus.** *The Sumatran Kingfisher.*

Dacelo concreta, *Temm. Pl. Col.* pl. 346 (1825).
Halcyon varia, *Eyton, P. Z. S.* 1839, p. 101.
Todirhamphus varius, *Blyth, J. A. S. B.* xv, p. 11; *id. Cat.* p. 47.
Halcyon concreta, *Sharpe, Mon. Alc.* p. 219, pl. 83; *Hume & Dav. S. F.* vi, p. 76; *Hume, Cat.* no. 131 bis; *Oates, B. B.* ii, p. 84; *Sharpe, Cat. B. M.* xvii, p. 285.
Caridagrus concreta, *Cab. & Heine, Mus. Hein.* ii, p. 161.

Coloration. Male. Crown and nape deep green, paler, brighter, and sometimes bluer on the nuchal border; the lores and a band from them, including the eye, passing above the ear-coverts and round the nape black, forming a border to the green crown; a ferruginous supercilium extending to the lores in front and to above the ear-coverts behind; another ferruginous band from the gape including the ear-coverts and extending to the broad collar round the hind neck, which is of the same colour but deeper in tint; a broad blue cheek-stripe below the ferruginous band; a narrow black collar behind the ferruginous collar; interscapular region, scapulars, and upper surface of wings and tail deep blue; wing-coverts and scapulars with brighter edges; middle of lower back, of rump, and generally of upper tail-coverts bright pale cobalt-blue; sides of lower back and rump black; quills black, except basal parts of outer webs above, which are blue, and the inner borders, which are buff; lower surface of tail-feathers also black; lower parts ferruginous, whitish or white in middle of abdomen and on lower tail-coverts.

Female. Back and wings above dull green, with pale buff spots on the scapulars and wing-coverts. Young males have similar pale spots, although except in being duller the plumage resembles that of adults of the same sex. Nestlings of both sexes resemble adults of the same sex.

Bill above black, lower mandible and edges of upper chrome-yellow; irides deep brown; legs chrome-yellow (*Davison*).

Length about 9·6; tail 2·5; wing 4·5, tarsus ·75; bill from gape 2·4.

Distribution. Malay Peninsula with the extreme south of Tenasserim, Sumatra and Borneo.

Habits, &c. According to Davison this Kingfisher is not found near water, but in thick forest, and lives on lizards and large wood-lice.

Genus **CARCINEUTES**, Cab., 1860.

A small genus of only two species, one confined to Borneo, while the other is found in Burma &c. Sexes very different in colour, the males barred with blue and black above, the females with rufous and black. Feathers of nape slightly elongate. Bill broad, comparatively short; culmen straight, rounded. First primary shorter than all the other primaries; tail moderately long, rounded at the end.

This approaches *Dacelo*, the "laughing jackass" of Australia, in structure, more than any other Indian or Burmese Kingfisher does.

1050. **Carcineutes pulchellus.** *The Banded Kingfisher.*

Dacelo pulchella, *Horsf. Trans. Linn. Soc.* xiii, p. 175 (1821); *Blyth, Cat.* p. 46; *Horsf. & M. Cat.* p. 122.

Carcineutes pulchellus, *Cab. & Heine, Mus. Hein.* ii, p. 163; *Sharpe, Mon. Alc.* p. 251, pl. 96; *Blyth & Wald. Birds Burm.* p. 70; *Hume & Dav. S. F.* vi, pp. 79, 499; *Hume, Cat.* no. 132 ter; *Bingham, S. F.* viii, p. 193; ix, p. 154; *Oates, B. B.* ii, p. 86; *Sharpe, Cat. B. M.* xvii, p. 198.

Carcineutes amabilis, *Hume, S. F.* i, p. 474; *Sharpe, S. F.* ii, p. 484; *Hume, ib.* p. 485.

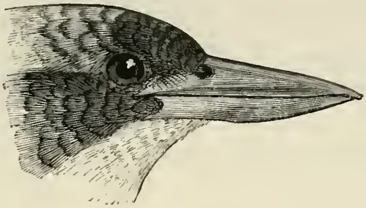

Fig. 39.—Head of *C. puchellus*, $\frac{2}{3}$.

Coloration. Male. Broad frontal band, sides of head and neck, and a more or less perfect collar round the hind neck chestnut; occiput and nape cobalt-blue, base of the feathers white, banded with black near the blue tip; remainder of upper plumage, including the wings and tail, banded black and verditer-blue, the feathers barred with white instead of blue except at the ends or exposed portions; quills black with white inner margins, the secondaries with white spots forming imperfect bars; lower parts white; breast, flanks, and under wing-coverts tinged with dull rufous; tail-feathers barred with white beneath.

Female. Upper parts and sides of head and neck transversely banded with black and pale brownish rufous, more narrowly on the head and neck; primaries brown, unbanded; lower parts white, with black spots forming imperfect bars on the breast and flanks.

Bill vermilion; irides purplish grey; legs and feet dull pale green (*Davison*).

Length about 8·5; tail 2·75; wing 3·5; tarsus ·5; bill from gape 1·8.

Distribution. Pegu (not Arakan) and Tenasserim, more common in the latter; the Malay Peninsula, Sumatra and Java.

Habits, &c. Generally found away from water in forest, feeding on small lizards and various insects. Nidification unknown.

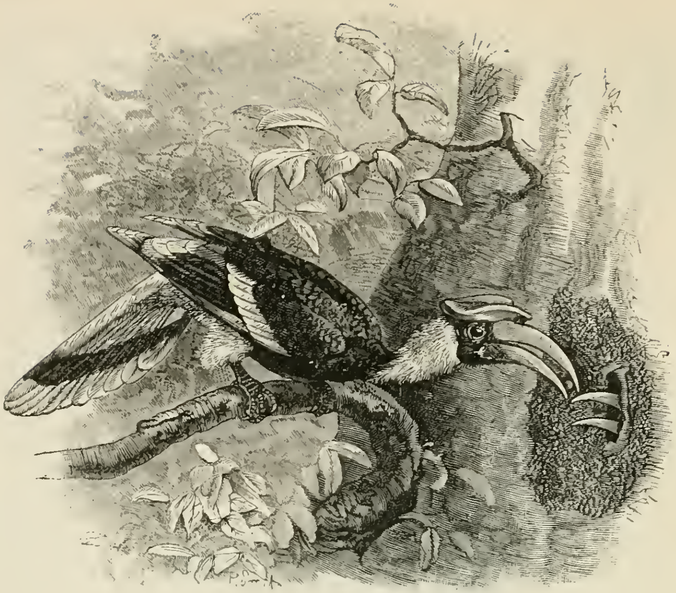

Fig. 40.—*Dichoceros bicornis* and nest.

Suborder *BUCEROTES*.

Cæca wanting; oil-gland tufted. Sternum with two shallow notches, one on each side in the posterior margin; behind the ill-developed manubrium is a perforation as in *Meropidæ*. Both carotids present as a rule, though there are exceptions. Spinal feather-tract not defined on the neck, which has no lateral bare tracts or apteria; no aftershaft; no down on bare parts of skin. Deep plantar tendons as in *Coraciæ*.

Family BUCEROTIDÆ.

An enormous bill, generally curved, and furnished in most genera with a casque upon the basal portion of the culmen; this casque varies in shape, and is generally hollow or cellular, but the anterior part is solid in *Rhinoplax*. Primaries 11. Tail-feathers 10. The under wing-coverts as a rule do not cover the basal part of the quills, and this may, as Mr. Ogilvie Grant has suggested, account for the extraordinary noise made by some of the larger forms when flying, the sound being produced by the air rushing between the quills. The eyelids are furnished with strong eyelashes. The sexes are as a rule alike in plumage, but often differ in size, in the form of the casque, and in the coloration of the soft parts.

The Hornbills are a very well-marked family found nearly throughout the Ethiopian and Oriental regions and occurring also in the Papuan subregion. They are especially remarkable for their nidification, the account of which was long regarded as a fable, but has now been confirmed by numerous observers. A hole in a tree is selected, and then the female, usually with the aid of the male, encloses herself and shuts up the orifice with the exception of a narrow vertical slit, by means of earth mixed with the birds' own droppings. In some cases, as *Aceros nepalensis* and *Lophoceros birostris*, the droppings alone are used, and the process of enclosure is then performed by the female from within the nest. She is thus enclosed before she begins to lay, and apparently remains in the hole till the young, which are naked when they leave the egg, are fledged, being fed all the time by the male through the slit left in the enclosing partition, which just allows room for the bird's bill to be pushed through. The eggs are white when laid, but generally become discoloured during incubation.

All Oriental forms belong to one subfamily. By Europeans in India Hornbills are commonly, but incorrectly, called "Toucans." The true Toucans (*Rhamphastidæ*) are peculiar to South America, and are allied to the Barbets.

Key to the Genera.

- *a*. Casque, when present, cellular within; bill considerably curved; hind neck and middle of back feathered.
  - a'. Casque large in adults, as high as upper mandible or higher.
    - a''. Casque broad, concave above, ending anteriorly in two points .... Dichoceros, p. 142.
    - b''. Casque compressed, ending in a single point .... Anthracoceros, p. 143.
  - b'. Casque moderate or small or wanting.
    - c''. Casque low, broad, rounded above, composed of transverse ridges ...... Rhytidoceros, p. 146.
    - d''. No casque; oblique ridges at side of base of upper mandible: size large .. Aceros, p. 149.
    - e''. Casque small, compressed, its upper edge curving down in front.
      - a^3. Crest moderate, of ordinary feathers.
        - a^4. Chin and throat naked .... Anorrhinus, p. 150.
        - b^4. Chin and throat feathered ...... Ptilolæmus, p. 151.
      - b^3. Crest very large, loose-textured .. Berenicornis, p. 153.
    - f''. Casque small, compressed and pointed, or wanting; no ridges on side of bill: size of birds small .... Lophoceros, p. 154.
- *b*. Casque solid in front; bill nearly straight; neck all round and middle of back naked; middle rectrices very long. .... Rhinoplax, p. 158.

Genus **DICHOCEROS**, Gloger, 1842.

Size large. Bill very large, stout and much curved; casque large and broad, covering more than the basal half of the culmen, the sides flat and vertical behind, the top overhanging in front, the posterior edge broad, projecting over the head behind and rounded, the upper surface flat behind, concave in front, terminating anteriorly in two lateral points that are blunted in old birds. No conspicuous crest; feathers of head loose-textured; chin covered with feathers; tail slightly rounded at end. Sexes alike in plumage.

The casque is small and pointed in front in the young and becomes gradually developed as in all Hornbills.

A single species.

1051. **Dichoceros bicornis.** *The Great Hornbill.*

Buceros bicornis, *Linn. Syst. Nat.* i, p. 153 (1766); *Elliot, Ibis,* 1877, p. 416.

Buceros cavatus, *Shaw, Gen. Zool.* viii, pt. 1, p. 18 (1812); *Jerdon, Madr. Jour. L. S.* xi, p. 37; *Blyth, J. A. S. B.* xii, p. 986; xvi, p. 993; *id. Cat.* p. 42; *Tickell, J. A. S. B.* xxiv, p. 279; *Baker, J. A. S. B.* xxviii, p. 292.

Buceros homrai, *Hodgs. J. A. S. B.* i, p. 251 (1832); *id. As. Res.* xviii, pt. 2, p. 169, pl.

Dichoceros cavatus, *Gloger, Hand- u. Hilfsb.* p. 335; *Fairbank, S. F.* iv, p. 254; *Hume & Bourdillon, ibid.* p. 384; *Hume & Inglis, S. F.* v, p. 20; *Hume & Dav. S. F.* vi, p. 98; *Oates, S. F.* vii, p. 45; *Hume, Cat.* no. 140; *id. S. F.* xi, p. 51; *Bingham, S. F.* viii, p. 461; ix, p. 158; *Vidal, S. F.* ix, p. 50; *Butler, ibid.* p. 383; *Davison, S. F.* x, p. 352; *Macgregor, ibid.* p. 436; *Barnes, Birds Bom.* p. 104; *Davidson, Jour. Bomb. N. H. Soc.* vi, p. 333.

Homraius bicornis, *Bonap. Consp. Vol. Anisod.* p. 2; *Horsf. & M. Cat.* ii, p. 583; *Jerdon, B. I.* i, p. 242; *id. Ibis,* 1872, p. 4; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 154.

Buceros (Homraius) cavatus, *Tickell, Ibis,* 1864, p. 176.

Dichoceros bicornis, *Blyth & Wald. Birds Burm.* p. 68; *Wardl.-Rams. Ibis,* 1877, p. 454; *Elliot, Mon. Buc.* pl. vi; *Oates, B. B.* ii, p. 87; *id. Ibis,* 1888, p. 72; *id. in Hume's N. & E.* 2nd ed. iii, p. 68; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 571; vii, p. 381; *Ogilvie Grant, Cat. B. M.* xvii, p. 355

Homrai, H. Nepal; *Banrao,* H. Mussooree; *Kugrong,* Lepcha; *Garuda,* Can.; *Garud,* Mahr.; *Malle Moraki,* Mal.; *Hivang,* Assamese; *Ouk-chingyee,* Burm.

Coloration. Head all round as far back as ends of ear-coverts black; neck all round fulvescent white; back, rump, scapulars, median and lesser wing-coverts, breast and under wing-coverts black; greater coverts and quills black, with the bases and ends white; lower abdomen, upper and under tail-coverts white; tail yellowish white, with a broad subterminal black band on each feather.

Bill and casque yellow, tinged with red at the tip and with orange in the middle. In the male the culmen in front of the casque, a triangular patch at each side of the anterior end of the casque, and the posterior portion of the casque are black, but not in the female, in which, however, the posterior portion of the casque is red. In both sexes the base of the mandible is black. Irides in male blood-red, in female pearly white; eyelids black; orbital skin dark fleshy pink; legs and feet greenish plumbeous.

Length about 52 inches; tail 15; wing 20; tarsus 2·9; bill from gape to point in a straight line 10·5. Females rather less, wing 18; bill from gape 9. Tenasserim birds are decidedly smaller than Himalayan.

Distribution. Along the Sahyádri or Western Gháts from the neighbourhood of Bombay to Cape Comorin; this bird is unknown elsewhere in the Indian Peninsula, and is wanting in Ceylon, but is found throughout the Himalayas as far west as Kumaun, up to about 5000 feet; and is generally distributed in Assam, Cachar, Tipperah, and other countries between Assam and Burma, throughout Burma, the Malay Peninsula, and Sumatra.

Habits, &c. Like the other large Indian and Burmese Hornbills this is a forest bird, and generally keeps to high trees; it appears never to descend to the ground. Wherever it is found, it makes its presence known by the great noise produced by its wings in flying, a sound that may be often heard a mile away. Its flight is an alternation of a series of flappings of the wings and of sailing along with the wings motionless, but the flapping predominates and the flight is less undulating than in many Hornbills. Sometimes this bird is found in pairs, more often in flocks of from five to twenty or more. The food consists mainly of fruit, but insects and lizards are also eaten, as Tickell has shown; the fruit or other food, as with many other Hornbills, is tossed in the air and allowed to fall into the bird's throat. The nidification was observed first by Tickell, subsequently by Mr. R. Thompson, Major Bingham, and others, and is typical. The eggs, usually two or three in number, are laid about April in the Himalayas, but in February in Tenasserim, Kanara, and Travancore, and measure about 2·62 by 1·88.

Genus **ANTHRACOCEROS**, Reich., 1849.

Casque very large and high, sharp-edged and projecting in front, broader and carried back above the crown behind, the upper border curved and parallel with the commissure. Orbital skin and that on the sides of the throat nude; chin and middle of throat feathered. Tail long and wedge-shaped at the end; wings rounded and short. Plumage of the two sexes similar, but casque differently coloured.

A genus of five or six species, ranging throughout the greater part of the Oriental region. Two species are Indian. Both have the same habits. They are usually found in parties (families) of five or six, and keep to high trees either in forest or in groves in well-wooded country, especially near rivers; they live chiefly on fruit and berries; and are very noisy, making a cackling sound in chorus. Their flight, unlike that of the larger Hornbills generally, is comparatively silent but weak and undulating, and consists of alternate flapping and sailing. The breeding-habits are the same as those of other Hornbills.

Key to the Species.

Outer tail-feathers entirely white.............	*A. coronatus*, p. 144.
Outer tail-feathers only white at the ends	*A. albirostris*, p. 145.

1052. **Anthracoceros coronatus.** *The Malabar Pied Hornbill.*

Buceros coronatus, *Bodd. Tabl. Pl. Enl.* p. 53 (1783).
Buceros pica, *Scop. Del. Flor. et Faun. Insub.* ii, p. 87 (1786); *Blyth, J. A. S. B.* xvi, p. 993; xviii, p. 802; xxi, p. 352; *id. Cat.* p. 43; *Tickell, Ibis*, 1864, p. 179.
Buceros malabaricus, varr. β et γ, *Lath. Ind. Orn.* i, p. 143 (1790); *Tickell, J. A. S. B.* ii, p. 579; *Jerdon, Madr. Jour. L. S.* xi, p. 38; *Blyth, J. A. S. B.* xii, p. 993; *Layard, A. M. N. H.* (2) xiii, p. 260.
Buceros violaceus, *Shaw, Gen. Zool.* viii, p. 19 (1811); *Blyth, J. A. S. B.* xii, p. 994.
Hydrocissa coronata, *Horsf. & M. Cat.* ii, p. 588; *Jerdon, B. I.* i, p. 245; *Holdsworth, P. Z. S.* 1872, p. 425; *Ball, S. F.* ii, p. 387; iii, p. 290; vii, p. 204; *Hume, Cat.* no. 141; *Vidal, S. F.* ix, p. 51; *Butler, S. F.* ix, p. 383; *Davison, S. F.* x, p. 352; *Barnes, Birds Bom.* p. 105.
Anthracoceros coronatus, *Elliot, Mon. Buc.* pl. xi; *Legge, Birds Ceyl.* p. 272; *Parker, S. F.* ix, p. 478; *id. Ibis*, 1886, p. 184; *Ogilvie Grant, Cat. B. M.* xvii, p. 362.

Dhan Churi, H.; *Suliman Murghi*, Dakhani; *Bagma dunes*, Beng.; *Kuchla-Kha*, Uriya; *Wayera*, Mahr.; *Kannari*, Concan; *Peshta ganda*, Gond.; *Porowa Kændetta*, *Atta Kændetta*, Cing.; *Errana-chundoo-kuravi*, Tamil (Ceylon).

Coloration. Whole head and neck and upper parts throughout, including the wings above and the middle pair of tail-feathers, black glossed with dark green; lower breast, abdomen, lower tail-coverts, and all the tail-feathers except the middle pair white, as are broad tips of all quills except the first two primaries and the tertiaries, the bases of the primaries and part of the edge of the wing; under wing-coverts and axillaries black.

The casque is large and compressed, not convex at the sides. Bill and casque are waxen yellow, except the base of both mandibles and a large spot occupying about the anterior three fourths of the upper portion of the casque, which are black. In the male, but not in the female, the back of the casque is black. Irides orange-red in males, brown in females; naked skin blackish round the eye in males, white in females; bare skin on the throat flesh-coloured; legs and feet grey.

Length about 3 feet; tail 12·5 inches; wing 13·5; tarsus 2·5; bill from gape 7·5. Females rather less. As usual Ceylon birds are smaller than those of Orissa and Northern Malabar.

In the young the basal half of the outer tail-feathers is black, and there is at first no black on the casque, which is small. The nestling, according to Parker, has a brownish-white bar on the black feathers, except on the quills and rectrices.

Distribution. Ceylon, in the dry forests of the low country, woods at the base of the Western Gháts in Malabar as far north as Ratnágiri, and the forest-region of South-western Bengal, Orissa, Bastár, and the Eastern Central Provinces; not recorded elsewhere.

Habits, &c. The nidification has not been recorded by an eye-witness, but, as shown by Legge, Parker, and others, is undoubtedly similar to that of other Hornbills. This bird breeds in Ceylon from March to June and lays 2 to 4 eggs, measuring about 2 by 1·5.

1053. **Anthracoceros albirostris.** *The Indo-Burmese Pied Hornbill.*

Buceros malabaricus, *Gm. Syst. Nat.* i, p. 359 (1788).

Buceros albirostris, *Shaw & Nodd. Nat. Misc.* xix, p. 819 (1790–1813); *Blyth, J. A. S. B.* xii, p. 995; xvi, p. 994; xviii, p. 803; *id. Cat.* p. 43; *Tickell, Ibis*, 1864, p. 179.

Buceros nigralbus, *Hodgs. Gray's Zool. Misc.* p. 85 (1831), descr. nulla.

Buceros leucogaster, *Blyth, J. A. S. B.* x, p. 922 (1841); xii, p. 177.

Buceros affinis (*Hutton*), *Blyth, J. A. S. B.* xviii, p. 802 (1849); *id. Cat.* p. 43.

Hydrocissa albirostris, *Horsf. & M. Cat.* ii, p. 589; *Jerdon, B. I.* i, p. 247; *id. Ibis*, 1872, p. 5; *Ball, S. F.* iii, p. 290; vii, p. 204; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 69; *Blyth & Wald. Birds Burm.* p. 68; *Inglis, S. F.* v, p. 20; *Bingham, S. F.* v, p. 84; viii, p. 462; ix, p. 158; *Wardl.-Rams. Ibis*, 1877, p. 455; *Hume & Dav. S. F.* vi, p. 100; *Anders. Yunnan Exped., Aves*, p. 577; *Oates, S. F.* vii, p. 46; *Hume, Cat.* no. 142; *id. S. F.* xi, p. 51.

Hydrocissa affinis, *Jerdon, B. I.* i, p. 247; *Blyth, Ibis*, 1866, p. 349; *Hume, S. F.* vi, p. 103; vii, p. 205; *id. Cat.* no. 143.

Hydrocissa coronata, *apud Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 266; xli, pt. 2, p. 143.

Anthracoceros malabaricus, *Elliot, Mon. Buc.* pl. xiii; *Ogilvie Grant, Cat. B. M.* xvii, p. 365.

Anthracoceros albirostris, *Oates, B. B.* ii, p. 90; *id. in Hume's N. & E.* 2nd ed. iii, p. 72; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 588; vii, p. 428.

The Bengal Pied Hornbill, The Dehra-Doon Hornbill, Jerdon; *Hay-tuk tek-ee*, Assamese; *Ouk-khyen*, Burmese.

Coloration. Similar to that of *A. coronatus*, except that the four outer pairs of tail-feathers are black for three-fourths of their length and only white for 3 or 4 inches at the tip. The casque is very different in shape, not compressed, but convex at the sides and swollen. The black marks on the bill and casque are different: in males there is a black band running obliquely downwards and backwards from the anterior point; the back of the casque, the base of both mandibles, and part of the commissure are black. In females the back of the casque, the anterior half of the casque, the culmen in front of the casque, and the whole commissure and tips and base of both mandibles are black, and there is a red-brown mark on the lower mandible in front of the black base. The iris is reddish brown; legs and feet plumbeous in both sexes.

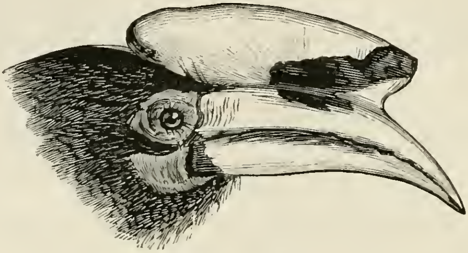

Fig. 41.—Head of *A. albirostris*, ♂, ¼.

Distribution. There are two varieties, distinguished by size alone: the larger (*A. affinis*) inhabits the Lower Himalayas, as far west as Dehra Dún, the Rajmehal Hills, Midnapore, and parts of Chutia Nagpur, where it meets *A. coronatus*. It is also found in Assam and the Khási and Nága hills, and measures: length in males about 35 inches, tail 11·5, wing 12·5, tarsus 2·3, bill from gape 6; females being rather less. The smaller race, *A. albirostris*, ranges from Cachar and Manipur to Southern Tenasserim, Siam, and Cochin China, and measures in males: length 28·5, tail 10·5, wing 10·75, tarsus 2, bill from gape 5; females somewhat smaller. The difference in weight is considerable, fine males weighing according to Hume 2·87 and 1·75 lbs. respectively.

I quite agree with all Indian ornithologists who reject the misleading name *malabaricus* for this species.

Habits, &c. Generic. This species has been observed by Mr. Inglis to catch and eat fish; it is also, according to Wardlaw Ramsay, very fond of snakes. It breeds in Burma in March, and lays usually 2 or 3 eggs, measuring about 1·9 by 1·35.

Genus **RHYTIDOCEROS**, Reich., 1849.

Casque small, low, rounded, and apparently composed of imbricate plates, covering the basal portion of the culmen, their upper edges forming alternating furrows and ridges, which are curved forward in the middle and backwards at the sides. These ridges are wanting in the very young and increase in number to 7 or 8 with age. Chin and throat naked, forming a pouch. Commissure much worn in old birds, but not nearly so much broken away as in *Aceros*. Feathers of crown and nape lengthened and loose-textured, forming a crest.

Three species occur in the Eastern part of our area; the only other form known, *R. plicatus*, is Papuan.

Key to the Species.

a. Base of both mandibles with transverse ridges in adults : wing 17–20 .... *R. undulatus*, p. 147.
b. Base of both mandibles smooth
  a′. Wing 14 to 17 .... *R. subruficollis*, p. 148.
  b′. Wing 11 to 12 .... *R. narcondami*, p. 149.

1054. **Rhytidoceros undulatus.** *The Malayan Wreathed Hornbill.*

Buceros undulatus, *Shaw, Gen. Zool.* viii, p. 26 (1811).
Buceros plicatus, *apud Müller & Schleg. Verhandel.* pp. 24, 30; *Blyth, Cat.* p. 319; *nec Latham.*
Buceros ruficollis, *Blyth, J. A. S. B.* x, p. 922, partim; xii, p. 176; *nec Vieillot.*
Buceros pucoran, *Blyth, J. A. S. B.* xii, p. 990.
Buceros pusaran, *Blyth, J. A. S. B.* xvi, p. 998; *id. Cat.* p. 45; *Tickell, Ibis,* 1864, p. 180.
Rhyticeros plicatus, *Horsf. & M. Cat.* ii, p. 598; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 96; *Blyth, Ibis,* 1866, p. 350; *Jerdon, Ibis,* 1872, p. 5.
Aceros, sp. indet., *Godw.-Aust. l. c.*
Rhyticeros obscurus, *apud Hume, N. & E.* p. 115; *nec* Buceros obscurus, *Gm.*
Aceros plicatus, *Blyth & Wald. Birds Burm.* p. 69.
Rhytidoceros undulatus, *Tweeddale, Ibis,* 1877, p. 292; *Oates, B. B.* ii, p. 93; *id. in Hume's N. & E.* 2nd ed. iii, p. 80; *Elliot, Mon. Buc.* pl. 35; *Ogilvie Grant, Cat. B. M.* xvii, p. 382.
Rhyticeros undulatus, *Hume & Dav. S. F.* vi, p. 111; *Hume, Cat.* no. 146 bis; *id. S. F.* ix, p. 247; xi, p. 52; *Bingham, S. F.* viii, pp. 194, 463; ix, p. 159.

Mah-doh-la, Assamese.

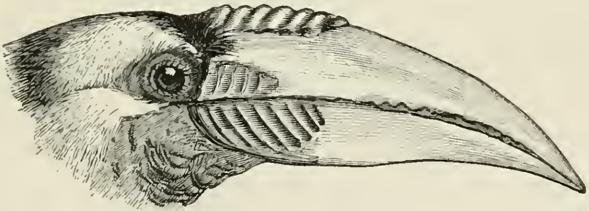

Fig. 42.—Head of *R. undulatus*, ¼.

Basal portion of both mandibles obliquely, somewhat irregularly ridged at the side, in adults; the ridges wanting in the young and increasing in number with age.

Coloration. Male. Forehead, middle of crown, and whole nape deep rich chestnut, passing into black on the hind neck; sides of head, including lateral portions of crown, sides and front of neck white, more or less tinged with buff; tail entirely white; remainder of plumage black, glossed with dark green and purple.

Bill pale yellow, reddish towards the base, the hollows between the ridges of the casque dark; irides orange-red; orbital skin dull red ; gular skin bright yellow, with a broad transverse interrupted band black or dusky ; legs and feet blackish.

Length about 45 ; tail 13 ; wing 20 ; tarsus 2·75 ; bill from gape 9. Tenasserim birds are smaller than those from Assam : wing 19 ; bill from gape 8.

Female. Black throughout except the tail, which is white ; gular skin blue, with a dark transverse bar ; other soft parts as in male. Length 38 ; tail 10 ; wing 17 ; tarsus 2·6 ; bill from gape 6·5.

Distribution. Assam, Khási and Nága hills, Cachar, Manipur, Arrakan, Toungngoo, Tenasserim, Malay Peninsula, Sumatra, Java, Borneo.

Habits, &c. Very similar to those of the other large Hornbills. This is a bird of powerful and steady, not undulating flight, and the noise made by its wings when flying may be heard for a very great distance. It lives almost entirely on fruit, and often travels long distances for its food ; it not unfrequently associates in considerable flocks when flying. Its call-note is dissyllabic according to Tickell. Like other fruit-eating birds, it wanders about and does not always occupy the same forest tract. It breeds about March, usually laying two eggs, that measure on an average 2·45 by 1·75.

1055. **Rhytidoceros subruficollis.** *Blyth's Wreathed Hornbill.*

Buceros subruficollis, *Blyth, J. A. S. B.* xii, p. 177 ; *id. Cat.* p. 320.
Buceros plicatus, *apud Blyth, J. A. S. B.* xii, p. 991 ; xvi, p. 998 ; *id. Cat.* p. 45 ; *nec Forster.*
Rhyticeros subruficollis, *Horsf. & M. Cat.* ii, p. 600 ; *Hume & Dav. S. F.* vi, p. 112 ; *Wardl.-Rams. Ibis,* 1877, p. 455 ; *Hume, Cat.* no. 146 ter ; *Bingham, S. F.* viii, p. 463 ; ix, p. 159.
Aceros subruficollis, *Blyth & Wald. Birds Burm.* p. 69 ; *Oates, S. F.* vii, p. 46.
Rhytidoceros subruficollis, *Tweeddale, Ibis,* 1877, p. 295 ; *Elliot, Mon. Buc.* pl. 36 ; *Oates, B. B.* ii, p. 91 ; *id. in Hume's N. & E.* 2nd ed. iii, p. 81 ; *Ogilvie Grant, Cat. B. M.* xvii, p. 384.

This only differs from *R. undulatus* in smaller size, in having no dark bar across the yellow or blue throat, and especially in the sides of both mandibles being smooth, there being no trace of the grooves that are found on the bills of adult *R. undulatus.*

Length of males about 34 ; tail 10 ; wing 16·5 ; tarsus 2·1 ; bill from gape 7. Females are smaller : length about 30 ; wing 14·5 ; bill 6.

Distribution. Arrakan, Eastern Pegu, and Tenasserim, more common from Moulmein to Tavoy than farther south ; also Sumatra and Borneo, and probably the Malay Peninsula.

Habits, &c. Similar to those of the last species except that, according to Bingham, this is less of a hill bird. It is generally seen in large flocks, flying low. Oates found birds of this species feeding on snails on the ground in an open plain. Tickell noticed Hornbills of this or the last species bathing in a river in the evening. The eggs have been taken in Pegu and Tenasserim at the end of

February and in March; the nest-hole is usually on very high trees and at a great height from the ground, the number of eggs one to three and the size about 2·29 by 1·61.

1056. **Rhytidoceros narcondami.** *The Narcondam Hornbill.*

Rhyticeros narcondami, *Hume, S. F.* i, p. 411 (1873); ii, pp. 108, 176; *id. Cat.* no. 146 quat.
Rhytidoceros narcondami, *Elliot, Mon. Buc.* pl. 38; *Ogilvie Grant, Cat. B. M.* xvii, p. 386.

Coloration. Male. Head and neck rufous; throat a little paler; tail white; remainder of plumage black glossed with dark green.

Female. Black throughout except the tail-feathers, which are white.

In both sexes the bill and casque are pale horny yellow, brownish red towards the base; furrows on the casque blackish brown; irides pale red; orbital skin pale smalt-blue; gular skin white, tinged with greenish blue; legs and feet brown.

Length about 26; tail 7; wing 12; tarsus 2·1; bill from gape 4·8. The female a little smaller.

Distribution. The island of Narcondam, east of North Andaman, Bay of Bengal. Only a single pair are known; these were obtained by Mr. Hume when he visited Narcondam in 1873.

Genus **ACEROS**, Hodgson, 1844.

No true casque, but the basal portion of the upper mandible is thickened and crossed at the sides by dark oblique grooves not extending across the culmen, wanting in the young and increasing in number with age; cheeks, chin, and throat naked; tail long and graduated. Feathers of head and neck loose-textured, both shafts and webs hair-like. Commissure of the bill greatly broken away in adults. Coloration of sexes different.

A single species.

1057. **Aceros nepalensis.** *The Rufous-necked Hornbill.*

Buceros nepalensis, *Hodgs. As. Res.* xviii, pt. 1, p. 178, 2 pls. (1829); *id. Gl. Sci.* i, p. 249; *Blyth, J. A. S. B.* xi, p. 970; xii, p. 989; xvi, p. 997, pl. xliv, fig. 1; *id. Cat.* p. 45; *Tickell, Ibis,* 1864, p. 182.
Aceros nipalensis, *Hodgs. in Gray's Zool. Misc.* p. 85 (1844); *Horsf. & M. Cat.* ii, p. 601; *Jerdon, B. I.* i, p. 250; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 95; *Blyth, Birds Burm.* p. 69; *Gammie, S. F.* iii, p. 209; *Elliot, Mon. Buc.* pl. 45; *Hume & Dav. S. F.* vi, p. 110; *Hume, Cat.* no. 146; *Oates, B. B.* ii, p. 98; *id. in Hume's N. & E.* 2nd ed. iii, p. 77; *Beddard, P. Z. S.* 1889, p. 588; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 572; vii, p. 382; *Ogilvie Grant, Cat. B. M.* xvii, p. 380.
Aceros leucostigma, *Salvadori, Ann. Mus. Civ. Gen.* (2) v, pp. 516, 573 (1887).

Coloration. Male. Head, neck, and lower parts rufous, darkest on the abdomen and flanks; end of middle primaries and terminal half of tail white; remainder of plumage black, glossed with dark green; in the lower tail-coverts some chestnut is often mixed with the black.

Female. Black, except the ends of the middle primaries and the terminal third of the tail, which are white. The young resemble adults of the same sex, except in wanting the ridges at the base of the upper mandible, these increase in number with age up to about seven.

Bill yellow, the grooves chestnut; iris red; naked skin round eyes and at base of bill velvety light blue; naked skin of throat bright scarlet (*Jerdon*): feet dark brown (*Hodgson*).

Length 4 feet; tail 18 inches; wing 18·5; tarsus 2·5; bill from gape 8·5. Females are less: length 42 inches; tail 16; wing 17·5.

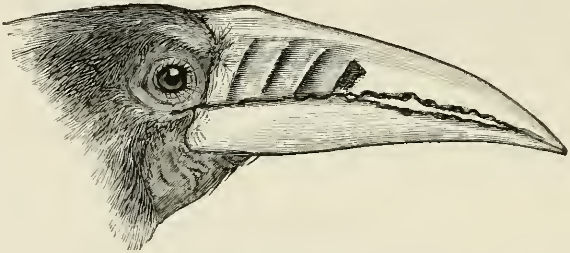

Fig. 43.—Head of *A. nepalensis*, $\frac{1}{4}$.

Distribution. The Himalayas of Nepal, Sikhim, and farther east, from 2000 to about 6000 feet; the hills south of Assam, Karennee, and the Muleyit range in Tenasserim.

Habits, &c. Food, mode of flight, and nidification similar to those of other large Hornbills. This bird has a monosyllabic croak. A full account of the nidification has been given by Mr. Gammie, who twice, both in April and in May, took a single egg from the hollow in a tree in which the female was enclosed in the usual manner. The number of eggs is said to be generally two. One egg measures 2·25 by 1·75, the other 2·12 by 1·57.

Genus **ANORRHINUS**, Reich., 1849.

Casque small, compressed, sharp-edged, with the upper ridge parallel to the culmen, posteriorly curved downwards in front; both mandibles serrated on the commissure (serrations indistinct in young individuals) and much worn down in aged birds. Chin and throat naked. Crest well developed, its feathers of ordinary texture. Tail slightly rounded, not white at the end. Sexes alike.

A single species.

1058. **Anorrhinus galeritus.** *The Bushy-crested Hornbill.*

Buceros galeritus, *Temm. Pl. Col.* pl. 520 (1824); *Blyth, Cat.* p. 44.
Buceros carinatus, *Blyth, J. A. S. B.* xiv, p. 187; xvi, p. 996.
Anorrhinus galeritus, *Horsf. & M. Cat.* ii, p. 594; *Hume, S. F.* iii, p. 318; *id. Cat.* no. 145 quat.; *Hume & Dav. S. F.* vi, pp. 109, 500; *Elliot, Mon. Buc.* pl. 42; *Oates, B. B.* ii, p. 95; *Ogilvie Grant, Cat. B. M.* xvii, p. 391.

Coloration. Head, neck, body above, and wings brownish black, glossed with green, becoming browner on the breast and abdomen and still paler round the vent and on the lower tail-coverts; basal two-thirds of tail-feathers brownish grey, terminal third black.

Bill black; irides lake-red; gular and orbital skin pale blue; angle of gonys, base of throat, and eyelids mottled white and black; legs and feet black.

Young birds have the greater and median wing-coverts, secondary quills, and scapulars with pale buff edges to the outer webs, and the anterior part of the bill whitish yellow.

Length of male 33; tail 11; wing 14·5; tarsus 2; bill from gape 5·75. Females are smaller, wing 13·3.

Distribution. The Malay Peninsula, ranging into South Tenasserim as far north as Nwalabo mountain; also Sumatra and Borneo.

Habits, &c. Davison describes this Hornbill as a shy bird, keeping to high trees in forests, in parties of five or six, and never descending to the ground. The note resembles that of *Anthracoceros coronatus* and is uttered at short intervals.

Genus **PTILOLÆMUS**, Grant, 1892.

Like *Anorrhinus*, but with the throat covered with feathers; tail more rounded; feathers of crest, throat, and fore neck somewhat lax in texture; tail-feathers all tipped with white. There are two species, both peculiar, so far as is known, to British territory east of the Bay of Bengal.

Key to the Species.

Sides of head, chin and throat rufous	*P. tickelli*, p. 151.
Sides of head, chin and throat white	*P. austeni*, p. 153.

1059. **Ptilolæmus tickelli.** *Tickell's Hornbill.*

Buceros tickelli, *Blyth, J. A. S. B.* xxiv, p. 266 (1855); xxviii, p. 412; *Tickell, J. A. S. B.* xxiv, p. 285.
Toccus tickelli, *Tickell, Ibis,* 1864, p. 173, pl. iii.
Anorrhinus tickelli, *Blyth, Birds Burm.* p. 67; *Elliot, Mon. Buc.* pl. 43; *Hume, Cat.* no. 144 bis; *Oates, B. B.* ii, p. 96; *id. in Hume's N. & E.* 2nd ed. iii, p. 76.
Ocyceros tickelli, *Hume & Dav. S. F.* vi, p. 103; *Hume, S. F.* vii, p. 499; *Bingham, S. F.* viii, pp. 194, 460, 462; ix, p. 158.
Ptilolæmus tickelli, *Ogilvie Grant, Cat. B. M.* xvii, p. 392.

Coloration. Male. Plumes at each side of forehead dull rufous; crown and nuchal crest dark greyish brown, the feathers with whitish shaft-stripes and rufous edges; back, rump, upper tail-coverts, scapulars, tertiaries, and wing-coverts dark brown, larger secondary-coverts pale-edged, larger primary-coverts black, some of them white-tipped; primaries black, slightly glossed, tipped white and with a broad buff outer border for an inch or two near the middle, but gradually nearer the tip in the later primaries; secondaries black, outer web greyish brown and the margin buff; middle tail-feathers dark brown, other tail-feathers black glossed with green, all tipped white, the outer more broadly; sides of neck and lower parts bright rufous, feathers of fore-neck with pale shaft-stripes; thigh-coverts mixed with dusky; wing-lining dark brown, edge of wing in front of winglet buff.

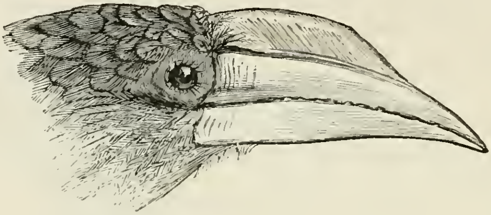

Fig. 44.—Head of *P. tickelli*, ⅓.

Female. The plumes at the sides of the forehead are concolorous with the crown; there are no white tips to the primary-coverts, and those to the quills are small or wanting; lower parts duller and darker than in the male, growing blackish on the chin and dusky on the vent and lower tail-coverts.

Bill and casque yellowish white in the male, the tip of the lower mandible blackish, and a saffron patch on each side of the base; bill and casque of female brownish black; irides in both sexes bright brown; skin around orbits and at base of lower mandible bluish white or blue; legs and feet brownish black.

Length of male 30; tail 11·5; wing 13; tarsus 2; bill from gape 5. The female is smaller: wing 12; bill 4·5.

Distribution. Only known from the Tenasserim hills east of Moulmein.

Habits, &c. A shy restless bird, keeping to high forest, usually in parties of 8 or 10, and flying with the almost noiseless flight of *Anthracoceros*, alternately flapping and sailing. The nest has been described by Major Bingham, who found from 3 to 5 eggs in each of the usual nest-holes in February. The eggs are white originally, but generally stained during incubation, and average 1·82 by 1·34 in dimensions. These birds, according to Major Bingham, are far less wary in the breeding-season than at other times.

1060. **Ptilolæmus austeni.** *Godwin-Austen's Hornbill.*

Anorhinus galeritus, *apud Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 96; xli, pt. 2, p. 143; *id. Ibis,* 1878, p. 206; *nec Temm.*
Anorhinus austeni, *Jerdon, Ibis,* 1872, p. 6; *Hume, S. F.* iv, p. 493; v, p. 117; vii, pp. 167, 499: xi, p. 52; *id. Cat.* no. 144 ter; *Hartert, J. f. Orn.* 1889, p. 426.
Ptilolæmus austeni, *Ogilvie Grant, Cat. B. M.* xvii, p. 393.

Coloration. Male. Similar to that of *P. tickelli*, except that the cheeks, throat, sides of neck, and fore-neck are white instead of rufous, and the rest of the lower parts paler; the secondaries and middle tail-feathers too are not tipped white. The upper parts appear greyer, but this may be due to the state of the plumage. Female unknown.

Length about 31; tail 11·5; wing 12·5; tarsus 2; bill from gape 4·7.

Distribution. The only specimen known for a long time was obtained by Colonel Godwin-Austen at Asalu, in the North Cachar hills; subsequently three more were shot by Hartert in the hill-forest south of the Dehing; this species was also observed by Hume in Manipur.

Habits, &c. Very little known. Hartert came upon a flock of 8 or 10, and far from being as shy as *P. tickelli*, they allowed him to fire six shots and kill four birds, one of which was left hanging in a high tree, before they flew away. Their flight was rather noisy. They had eaten a few insects (*Mantides*, *Blattæ*, and locusts) besides fruit.

Genus **BERENICORNIS**, Bonap., 1850.

The only species of this genus is distinguished by its very full crest of loose-textured, hair-like feathers. This crest covers the crown; the feathers of the lores are similar and equally long, and are directed upwards and forwards. Bill large, curved, compressed; casque as in *Anorrhinus*. but small. Tail long, white, middle pair of feathers considerably exceeding the others.

1061. **Berenicornis comatus.** *The Long-crested Hornbill.*

Buceros comatus, *Raffl. Tr. Linn. Soc.* xiii, p. 339 (1822); *Hay, Mad. Jour. L. S.* xiii, pt. 2, p. 149; *Blyth, J. A. S. B.* xvi, p. 996, pl. xliv, fig. 2; *id. Cat.* p. 44.
Berenicornis comatus, *Bonap. Consp. Av.* i, p. 91; *Horsf. & M. Cat.* ii, p. 594; *Hume, S. F.* iii, p. 318; v, p. 20 note; *id. Cat.* no. 145 ter; *Hume & Dav. S. F.* vi, pp. 106, 500; *Kelham, Ibis,* 1881, p. 385; *Ogilvie Grant, Cat. B. M.* xvii, p. 423.
Anorrhinus comatus, *Elliot, Mon. Buc.* pl. 39; *Oates, B. B.* ii, p. 94; *Hartert, J. f. Orn.* 1889, p. 369.

Coloration. Male. Head, neck, breast, and anterior part of abdomen, tips of all quills except the first primary, the last secondaries and the tertiaries, a patch inside carpal bend of wing, and the whole tail white; rest of plumage black.

Female. Crown, chin, tips of wing-feathers, and whole tail white, rest of plumage black, shafts of crest-feathers black. In the young male most of the white feathers are black at the base, and the tail is black with white tips.

Bill black, slightly mottled with green at the base of both mandibles; iris wax-yellow; facial skin deep dull blue; legs and feet black. In younger birds the bill is chiefly dull horny green, and the facial skin pale blue or pink.

Length of adult male about 40; tail 18; wing 15; tarsus 2·5; bill from gape 7. Females a little less: wing 14, bill 5·75.

Distribution. Malayan Peninsula, Sumatra, and Borneo, ranging into Southern Tenasserim as far as the base of Nwalabo, near Tavoy.

Habits, &c. According to Davison this Hornbill is found in forests about the lower trees and undergrowth; it lives in small parties, often feeding on the ground and eating lizards, &c., as well as fruit; the flight is uniform and almost noiseless; the call a peculiar cry (a mewing sound according to Hartert) repeated several times in quick succession.

LOPHOCEROS, Hemp. & Ehr., 1828.

Size small. Casque either small, compressed, and terminating anteriorly in a point or entirely wanting. Bill much curved, carinate above. Tail graduated in all Indian species. Crest moderate. Plumage of Indian birds chiefly grey.

I refer to this African type (which is identical with *Tockus* of Lesson) the three small Hornbills of India and Ceylon. By Jerdon, Hume, and others they have been divided into two genera; by Ogilvie Grant they have been united and placed in a genus apart from their African relatives on account of their more wedge-shaped tail. This distinction I find does not hold good; neither Indian nor African forms are all alike in the relative lengths of the rectrices. I do not place the Indian *L. birostris* in a separate genus from the other two species, because the type of *Lophoceros*, the Abyssinian *L. nasutus*, closely allied to the Indian forms but without a casque, is only distinguished from the S. African *L. epirhinus* by the presence in the latter of a small casque, precisely like that of *L. birostris*, but smaller. It is clear that in this group of small Hornbills the presence or absence of a small casque is not a generic character.

The genus *Lophoceros* comprises 17 African species; two occur in the Peninsula of India and one in Ceylon. None extend farther east.

Key to the Species.

a. A small casque, pointed in front	*L. birostris*, p. 155.
b. No casque.	
a′. Nostrils in an elongate groove	*L. griseus*, p. 156.
b′. Nostrils round, not in a groove	*L. gingalensis*, p. 157.

1062. **Lophoceros birostris,** *The Common Grey Hornbill.*

Buceros birostris, *Scop. Del. Flor. et Faun. Insub.* ii, p. 87 (1786); *Blyth, J. A. S. B.* xvi, p. 995; *id. Cat.* p. 44.
Buceros ginginianus, *Latham, Ind. Orn.* i, p. 146 (1790); *Blyth, J. A. S. B.* xii, p. 996.
Tockus bicornis, *Horsf. & M. Cat.* ii, p. 597 (1856–8).
Meniceros bicornis, *Jerdon, B. I.* i, p. 248; *Blyth, Ibis,* 1866, p. 350; *King, J. A. S. B.* xxxvii, pt. 2, p. 214; *Horne, P. Z. S.* 1869, p. 241; *C. & G. Marshall, S. F.* iii, p. 331; *Butler, S. F.* iii, p. 457; v, p. 218.
Ocyceros ginginianus, *Hume, N. & E.* p. 113; *Ball, S. F.* ii, p. 388.
Ocyceros bicornis, *Fairbank, S. F.* v, p. 394.
Lophoceros birostris, *Elliot, Mon. Buc.* pl. 48.
Ocyceros birostris, *Davids. & Wend. S. F.* vii, p. 78; *Ball, ibid.* p. 205; *Hume, Cat.* no. 144; *Butler, S. F.* ix, p. 384; *Reid, S. F.* x, p. 22; *Davids. ibid.* p. 296; *Barnes, Jour. Bom. N. H. Soc.* i, p. 61; *id. Birds Bom.* p. 106; *Oates in Hume's N. & E.* 2nd ed. iii, p. 74; *Ogilvie Grant, Cat. B. M.* xvii, p. 394.

Chakotra, Dhanmar, Dhand, Dhanel, Lamdar, H.; *Selagilli,* H. at Saugor; *Puttial dhanes,* Beng.; *Rundu-mukala-guwa,* Tel.; *Munu-mukala-kaka, Irawache,* Tam.

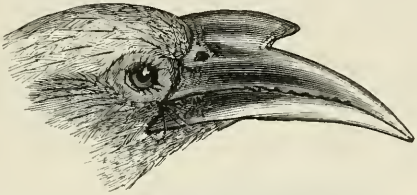

Fig. 45.—Head of *L. birostris,* ⅓.

Coloration. Upper parts light brownish grey, broad supercilia whitish; ear-coverts and cheeks blackish grey; primary and secondary quills blackish brown, all except the first two primaries tipped with white, the secondaries fringed with grey outside, the middle primaries with part of the outer web white, halfway down at first, but gradually nearer the tip on the inner feathers; tail above browner than back, each feather with a broad subterminal black or blackish-brown band glossed with green and a white tip; below from the chin to the breast grey, then passing into the white of the abdomen. The white tips of the primaries are wanting in immature birds.

Bill and casque blackish, the tips and outer edges of both mandibles (not of the casque) white; irides red-brown; feet dark plumbeous. In young birds most of the bill is white.

Length of male about 24; wing 8·7; tail 11·5; tarsus 1·9; bill from gape 4. Females are smaller, wing 7·9.

Distribution. From the base of the Himalayas throughout the better wooded parts of the Peninsula of India, except on the Malabar coast; wanting in Sind, Western Rajputana (except at Mount Abu), and the Punjab; rare in the Gangetic delta in Lower

Bengal, and not found farther east. This species does not occur in Ceylon.

Habits, &c. This little Hornbill is generally seen in small parties about open jungle, groves of trees, and gardens, but not in thick forest. It lives chiefly on fruit, but occasionally eats insects also. It has a harsh cry, and an undulating flight, with alternate flappings and sailings. An excellent account of the nidification at Mainpuri is given by Mr. Horne, who watched the female bird shut up, with her own droppings, the opening of the nest-hole in a sissoo tree, except the slit through which she received food from the male. The female never leaves the nest from before laying her first egg till the young are about a week old. The eggs, 3 to 5 in number, are laid from April to June; they are dull white in colour and measure about 1·7 by 1·22.

1063. **Lophoceros griseus.** *The Malabar Grey Hornbill.*

Buceros griseus, *Lath. Ind. Orn.* i, p. 147 (1790).
Tockus gingalensis, *apud Jerdon, Mad. Jour. L. S.* xi, p. 38; *id. B. I.* i, p. 250; *id. Ibis,* 1872, p. 5; *nec* Buceros gingalensis, *Shaw.*
Buceros gingalensis, *Baker, J. A. S. B.* xxviii, p. 292; *nec Shaw.*
Tockus griseus, *Blyth, Ibis,* 1866, p. 350; *Fairbank, S. F.* iv, p. 255; v, p. 395; *Hume & Bourd. S. F.* iv, p. 387; *Hume, Cat.* no. 145; *Elliot, Mon. Buc.* pl. 54; *Vidal, S. F.* ix, p. 51; *Butler, ibid.* p. 384; *Davison, S. F.* x, p. 352; *Macgregor, ibid.* p. 436; *Barnes, Birds Bom.* p. 106; *Davidson, Jour. Bom. N. H. Soc.* vi, p. 334.
Ocyceros griseus, *Ogilvie Grant, Cat. B. M.* xvii, p. 396.

The Jungle Grey Hornbill, Jerdon; *Kaldal-haki,* Can.

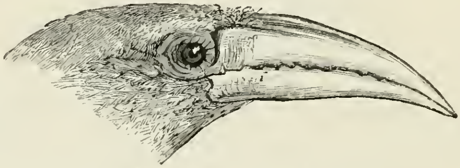

Fig. 46.—Head of *L. griseus*, $\frac{1}{3}$.

Coloration. Upper parts dark slaty grey, brownish on the back; nasal plumes and broad supercilia, extending far backwards, brownish white; ear-coverts blackish; feathers of head, crest, throat, and breast with whitish shaft-stripes; quills black, primaries, from 3rd to 7th, 8th, or sometimes 9th, with broad white tips; tail-feathers black glossed with green, the three outer pairs white for some distance from the tips; lower parts ashy grey, paler on the chin and on the abdomen; vent and lower tail-coverts rufous.

Both mandibles are thickened at the side by a kind of incrustation towards the base; nostrils elongate, in a groove, the posterior portion of which is covered by membrane and overhung by a tuft of feathers.

Bill horny yellow, with a brownish-red tinge except towards the tip, dusky or black along the commissure; irides red-brown; orbital skin black; legs and feet greenish. In the female the bill is paler and has black patches on the top of the culmen and at each side of the lower mandible, near the base in both cases. Young birds have dull white or yellow irides.

Length about 24; tail 9; wing 8·5; tarsus 1·75; bill from gape 4·25. Females measure rather less.

Distribution. Forests along the Malabar coast, as far north as the neighbourhood of Bombay. This Hornbill does not ascend the hills of Southern India above about 3000 feet. *Tockus gingalensis* is included in Dr. King's list of Goona birds, but doubtless by mistake.

Habits, &c. A forest species, shy, usually keeping in small flocks, living on fruit, and having a peculiar call. The flight, according to Bourdillon, is more rapid and easy than that of *L. birostris.* Mr. Baker found 3 eggs in a nest that he took; Mr. Davidson, in Kanara, 2 or 3. The latter found several nests in February and the beginning of March. The breeding-habits are similar to those of *L. birostris.*

1064. **Lophoceros gingalensis.** *The Ceylonese Hornbill.*

Buceros gingalensis, *Shaw, Gen. Zool.* viii, p. 37 (1811); *Blyth, J. A. S. B.* xii, p. 998; xvi, p. 996; *id. Cat.* p. 44; *Layard, A. M. N. H.* (2) xiii, p. 260.

Tockus gingalensis, *Blyth, Ibis,* 1866, p. 350; 1867, p. 296; *Holdsworth, P. Z. S.* 1872, p. 425; *Legge, Ibis,* 1874, p. 14; 1875, p. 282; *id. Birds Ceyl.* p. 275, pl. xiv; *Elliot, Mon. Buc.* pl. 55; *Hume, S. F.* vii, p. 366; *id. Cat.* no. 145 bis.

Ocyceros gingalensis, *Ogilvie Grant, Cat. B. M.* xvii, p. 397.

Kændetta, Cingalese.

Coloration. Crown and nape greyish brown, the feathers with pale shaft-stripes; an indistinct pale superciliary band extending over the ear-coverts, which are blackish; upper parts dark ashy grey, browner on the hind neck; wing-coverts dark-edged; quills black; outer webs of secondaries grey above, the five middle primaries, beginning with the third, with long white tips; tail-feathers blackish brown, the middle pair throughout, the others with long white terminations, the three outer pairs become entirely white in old birds; lower parts white, greyish in the young; vent and lower tail-feathers pale rufous.

Nostril round, free from feathers. Bill in males yellowish white, with a black patch on each side of the base of the upper mandible, and another beneath the lower mandible; in females the bill is black, with a long white patch on the lower half of the upper mandible; irides red; orbital skin black; legs and feet greenish plumbeous.

Length about 23; tail 8·75; wing 8; tarsus 1·75; bill from gape 4·25. Females are smaller, the wing measuring 8·25, and the bill 3·4.

Distribution. Throughout Ceylon, in forest up to an elevation of 4000 feet.

Habits, &c. Similar to those of the last species, but the flight as observed by Legge appears to resemble that of *L. birostris.* This Hornbill lives mainly on fruit, but occasionally eats lizards, scorpions, and insects.

Genus **RHINOPLAX**, Gloger, 1842.

Bill moderate, pointed, nearly straight. Casque high, flat at sides, rounded above, vertically truncated in front, all the front part solid. Whole chin and throat, neck all round, and middle of back naked. Middle tail-feathers in the male twice as long as the others. Sexes alike in plumage.

This very remarkable and aberrant genus contains a single species only.

1065. **Rhinoplax vigil.** *The Helmeted Hornbill.*

Buceros vigil, *Forster, Ind. Zool.* p. 40 (1781).
Buceros scutata, *Bodd. Tabl. Pl. Enl.* p. 55 (1783).
Buceros galeatus, *Gm. Syst. Nat.* i, p. 360 (1788); *Blyth, J. A. S. B.* xvi, p. 998; *id. Cat.* p. 45.
Rhinoplax scutatus, *Horsf. & M. Cat.* ii, p. 581; *Hume, S. F.* iii, p. 318.
Rhinoplax vigil, *Elliot, Mon. Buc.* pl. 10; *Hume & Dav. S. F.* vi, p. 115; *Hume, Cat.* no. 146 quint; *Oates, B. B.* ii, p. 89; *Hartert, J. f. Orn.* 1889, p. 366; *Ogilvie Grant, Cat. B. M.* xvii, p. 427.

Coloration. Forehead, crown, and nape black; feathers behind eyes and ear-coverts chestnut; breast, sides of back, and outside of wings black; scapulars, tertiaries, and rump browner; abdomen, upper and lower tail-coverts, and under wing-coverts white; base and tips of all quills, except the first primary and the last secondaries, white; long middle pair of tail-feathers whity brown, the others white, all with a broad subterminal black band.

Anterior half of bill and front of casque yellow, rest of casque and posterior half of bill crimson; iris dark red; bare skin of neck and back, legs and feet, and skin everywhere beneath feathers dull deep red in male, in the female the naked back and hind-neck are reddish lilac, sides and front of neck greenish blue, veined with sky-blue (*Hartert*).

Length of male about 5 feet; tail 34 inches; wing 19; tarsus 3; bill from gape 6·5. Female: length about 50; tail 26; wing 16·5; bill 5·75.

Distribution. Malay Peninsula, extending into the extreme south of Tenasserim; also Sumatra and Borneo.

Habits, &c. A very shy bird, inhabiting high forest generally in pairs, not descending to the ground, and living on fruit. The flight is weak. The note is very peculiar and powerful; it begins with a series of whoops, uttered at intervals that grow gradually less till, after ten or a dozen quick repetitions, the call ends in a harsh cackling laugh. This account is taken from Davison, whose observations are confirmed by Hartert. Nothing is known of the nidification, nor of the use to which the bird puts its very singular, straight, pointed bill and heavy casque.

Suborder *UPUPÆ.*

Cæca wanting; oil-gland tufted; sternum with two deep posterior notches, one on each side; manubrium not forked, flat and broad, a perforation behind it; spinal feather-tract well-defined on the neck, and forked on the upper back. Only the left carotid is present. Deep plantar tendons free from each other, as far as the subdivision of the *flexor perforans digitorum*, but a vinculum from the *flexor longus hallucis* leads to that slip from the other tendon which supplies the third digit or middle toe, the union of the vinculum with the slip taking place below, not above the root of the toe *.

The Hoopoes have been shown by numerous observers, especially Murie (Ibis, 1873, pp. 181–211), to be closely allied both in structure and nesting-habits to the Hornbills. There are two families, *Upupidæ* and *Irrisoridæ*, the latter confined to Africa.

Family UPUPIDÆ.

Genus **UPUPA**.

This is the only genus in the family. Bill slender, long, curved from the base; tongue very short. A well-marked and long coronal crest, the hinder feathers longest. Tarsus short, scutellate behind as in *Alaudidæ*. Wing rounded, with 10 primaries. Tail moderate, of 10 rectrices.

The Hoopoes feed on the ground on grubs and insects and use as nests holes in trees, banks, or walls, frequently lining the hole with a little grass, feathers, or hair. The female sits very closely and is fed by the male. The nest-hole and the young smell very offensively, apparently owing to the dirty condition of the nest. The eggs are pale bluish or greenish white.

The genus ranges throughout the temperate and tropical parts of Europe, Asia, and Africa. Two species are Indian.

Key to the Species.

White between buff and black of crest-feathers	*U. epops*, p. 159.
No white on crest	*U. indica*, p. 161.

1066. **Upupa epops.** *The European Hoopoe.*

Upupa epops, *Linn. Syst. Nat.* i, p. 183 (1766); *Blyth, Cat.* p. 46; *Horsf. & M. Cat.* ii, p. 723; *Jerdon, B. I.* i, p. 390; *Scott, Ibis*, 1866, p. 222; 1867, p. 135; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 26; *Beavan, Ibis*, 1870, p. 310; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 99; xlv, pt. 2, p. 71; *Jerdon, Ibis*, 1872, p. 21; *Blanf. J. A. S. B.*

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* This discovery has just been made by Gadow, and is announced in 'Newton's Dictionary of Birds' (pt. iii, 1894), pp. 617, 618, fig. V^d. Hitherto it had been supposed that the plantar tendons of Hoopoes were free, as in Passeres.

xli, pt. 2, p. 44; *Brooks, ibid.* p. 75; *Hume & Henders. Lah. to Yark.* p. 182; *Hume, S. F.* i, p. 174; xi, p. 87; *id. Cat.* no. 254; *Butler, S. F.* iii, p. 462; v, p. 228; ix, p. 391; *Ball, S. F.* vii, p. 209; *Vidal, S. F.* ix, p. 57; *Davison, S. F.* x, p. 364; *C. H. T. Marshall, Ibis,* 1884, p. 412; *Barnes, Birds Bom.* p. 141; *Oates in Hume's N. & E.* 2nd ed. ii, p. 337; *Salvin, Cat. B. M.* xvi, p. 4.

Hud-hud, Pers. & H.; *Sutár,* Mahr.; *Sukdudu,* Chamba; *Katkuto,* Sind.

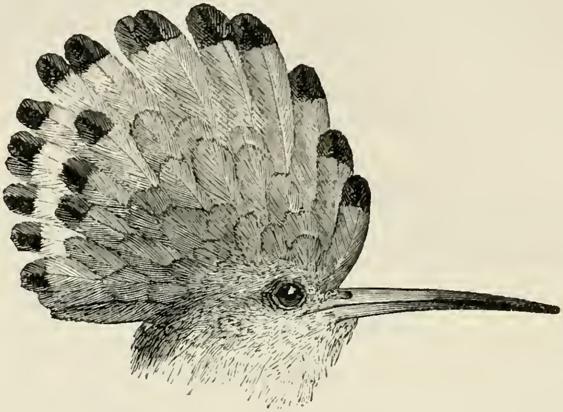

Fig. 47.—Head of *U. epops,* ⅗.

Coloration. Crest rufous-fawn, all the feathers with black tips, and on the longer feathers the rufous passes into pure white before the black end is reached; sides of head, chin, neck all round, and breast varying from sandy to pale rufous with a vinous tinge; upper back and wings along forearm light brown, then a black band, followed by a buffy-white one, crosses the wings and back, with a second black and a second white band on the wings, but the lower back is black or brown; the rump white; upper tail-coverts black, and tail black with a white bar across it halfway down; quills black, the first primary generally, but not always, with a white spot on the inner web, the other primaries with a white band across them, imperfect on the innermost; secondaries with white bases and four white bands; tertiaries brown, edged with buff and with an oblique buff band near the shaft on the inner web; abdomen white, with dark brown streaks in front.

Bill dark brown, pinkish at the base; irides red-brown; legs and feet plumbeous.

Length about 12; tail 4; wing 5·8; tarsus 9; bill from gape straight to point 2·5. Females rather less: wing 5·5; bill 2·3.

Distribution. In summer throughout the Southern Palæarctic region, including the Himalayas, migrating in winter to Africa, Arabia, and India as far south as Ratnágiri, the Deccan, Chutia Nagpur, Sylhet, and Manipur. Henderson found this bird common on the desert plateau of Ladák.

Habits, &c. Hoopoes are chiefly found in open country, cultivated or waste, and keep generally on the ground, though they perch occasionally. They are sprightly and familiar birds, and may be seen running about and searching for insects and especially grubs, which they extract with their long bills from some distance beneath the surface. The crest is usually kept folded back, but is raised quickly if the bird is excited or alarmed. The note is a double or treble sound like *hoop*. This species breeds in the Western Himalayas in April and May, and lays from 4 to 7 pale bluish-white eggs, measuring about 1·14 by ·7.

1067. **Upupa indica.** *The Indian Hoopoe.*

Upupa senegalensis, *apud Blyth, J. A. S. B.* xiv, p. 189; *id. Cat.* p. 46; *nec Sw.*

Upupa indica, *Reich. Handb. spec. Orn.* p. 320, pl. dxcvi, fig. 4037 (1851–4); *Anders. Yunnan Exped., Aves,* p. 578; *Salvin, Cat. B. M.* xvi, p. 10.

Upupa ceylonensis, *Reich. t. c.* pl. dcxv, fig. 4036; *Blyth, Ibis,* 1866, p. 366; *Hume, Cat.* no. 255; *Barnes, Birds Bom.* p. 142; *Oates in Hume's N. & E.* ii, p. 334.

Upupa nigripennis, *Gould MS., Horsf. & M. Cat.* ii, p. 725 (1858); *Jerdon, B. I.* i, p. 392; *id. Ibis,* 1872, p. 22; *MacMaster, J. A. S. B.* xl, pt. 2, p. 209; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 235; *Butler, S. F.* iii, p. 462; *Legge, Birds Ceyl.* p. 278.

Upupa longirostris, *Jerdon, B. I.* i, p. 393; *Hume, S. F.* iii, p. 89; xi, p. 88; *id. Cat.* no. 254 bis; *Blyth & Wald. Birds Burm.* p. 69: *Hume & Dav. S. F.* vi, p. 202; *Oates, B. B.* ii, p. 62; *id. in Hume's N. & E.* 2nd ed. ii, p. 338.

Hudhud, H.; *Sutâr,* Mahr.; *Kondeh pitta, Kukudeu guwa,* Tel. *Chaval kuruvi,* Tam., Ceylon; *Toun-bee-sote,* Burm.

Coloration similar to that of *U. epops,* except that there is no white on the crest, that the head, neck, back, and breast are more rufous, and that this colour extends farther over the abdomen: thighs often rufous.

Typical Burmese specimens have the wing in males 5·6, bill from gape 2·6; in females 5·3 and 2·4: but Indian and especially Ceylonese specimens run smaller—wing in Ceylonese males 5·3, in females 4·85; bill 2·4 and 2·1. Skins from India, especially from the North, very often show a tinge of white on the crest; these specimens Salvin regards as intermediate between *U. indica* and *U. epops,* hybrids in fact, and I agree with him. To separate the Indian and Burmese forms, and to make three species on such very small distinctions as exist, is neither necessary nor reasonable.

Distribution. With the exception of Sind and the Western Punjab, throughout India, Ceylon, Burma, Siam, Cambodia, and the countries eastward to Hainan. A resident species.

Habits, &c. Similar to those of *U. epops.* The breeding-season in various parts of India is from February till May, earlier to the southward; in Ceylon, according to Legge, November to April. The eggs are 4 to 7 in number, sometimes, it is said, more, pale bluish or greenish-white in colour, and measure about ·97 by ·66.

Order VI. MACROCHIRES.

The families of Swifts, Nightjars, and Frogmouths, here classed together, afford an even more difficult case than that of the *Anisodactyli*, their differences being of so well-marked and important a character as to make it very doubtful whether they can belong to the same order. The hallux in all is connected with the *flexor perforans digitorum*, and the arrangement of the deep flexors (except in *Macropteryx*) is Galline, as in *Coracias* and *Buceros*; the oil-gland is nude or wanting, the manubrium sterni very small or absent, the coracoids separate, and the number of both primary-quills and tail-feathers 10. The spinal feather-tract is well-defined on the neck, but forked on the upper back. All, too, have a short bill and an excessively broad gape, and all live on insects captured in the air.

The three families *Cypselidæ*, *Caprimulgidæ*, and *Podargidæ* form suborders.

The *Trochilidæ*, or Humming-birds of America, are generally placed in this order, but their relations to the Swifts are disputed by a few naturalists.

Another American family, *Steatornithidæ*, appears probably allied to the *Podargidæ*.

The other suborders are all Indian, and may be thus distinguished:—

a. Palate ægithognathous; no basipterygoid processes; no cæca; a nude oil-gland........	Cypseli.
b. Palate schizognathous; basipterygoid processes present; cæca functional; a nude oil-gland	Caprimulgi.
c. Palate desmognathous; no basipterygoid processes; cæca large; no oil-gland; a powder-down patch on each side of the rump	Podargi.

Suborder *CYPSELI.*

No cæca. Oil-gland present, but nude. Palate ægithognathous; no basipterygoid processes. No median wing-coverts. Sternum without posterior incisions, the keel high. No semitendinosus muscle. A large aftershaft.

Nidification varies greatly, but all the Swifts lay elongate white eggs, and in all the saliva is used to cement together the materials of the nest and to attach it to some surface. In some forms of *Collocalia* the nest consists entirely of inspissated saliva. The salivary glands are greatly developed, especially at the breeding-season. The young are hatched naked.

A single family.

Family CYPSELIDÆ.

Bill small, hooked at the end, gape very broad. Wings long, the primaries greatly developed, curved; secondaries very short. Humerus very short. Feet weak, the first or hind toe is more or less reversible, and all four toes are often directed forward in some of the genera.

This family is cosmopolitan, except that it does not occur in Arctic or Antarctic regions. There are three subfamilies, thus distinguished:—

a. Tarsus feathered; three anterior toes (2, 3, 4), each with three phalanges; wings extending far beyond tail	*Cypselinæ*, p. 163.
b. Tarsus generally naked; second toe with 3, third with 4, fourth with 5 phalanges as usual.	
a′. Tarsus equal to middle toe or longer; wings extending far beyond tail ..	*Chæturinæ*, p. 172.
b′. Tarsus shorter than middle toe; wings not extending beyond tail ..	*Macropteryginæ*, [p. 179.

Subfamily CYPSELINÆ.

This includes the typical Swifts, in which the hind toe is completely reversible, and the third and fourth toes have only three phalanges each. Sexes always alike. Two genera are Indian.

Key to the Genera.

a. Toes all directed forward as a rule..........	CYPSELUS, p. 164.
b. Toes in pairs; inner and hind toes directed inwards, the other two outwards..........	TACHORNIS, p. 170.

Genus **CYPSELUS** *, Illiger, 1811.

The true Swifts have the toes as a rule all directed forward, but the first or hinder toe is reversible. They are birds of powerful flight, though inferior in this respect to *Chætura*. All make nests attached to rocks or buildings, or very rarely to trees.

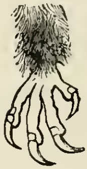

Fig. 48.—Left foot of *C. apus*, 1/1.

Key to the Species.

a. No white on rump.	
a'. Abdomen white	*C. melba*, p. 164.
b'. Abdomen brown.	
a''. General colour blackish brown	*C. apus*, p. 165.
b''. General colour greyish brown	*C. murinus*, p. 166.
b. A white band across rump.	
c'. Tail deeply forked.	
c''. Larger: wing 7	*C. pacificus*, p. 167.
d''. Smaller: wing 6	*C. leuconyx*, p. 167.
d'. Tail even or nearly even.	
e''. Lower tail-coverts greyish brown, paler than abdomen	*C. affinis*, p. 168.
f''. Lower tail-coverts blackish brown like abdomen	*C. subfurcatus*, p. 169.

1068. **Cypselus melba.** *The Alpine Swift.*

Hirundo melba, *Linn. Syst. Nat.* i, p. 345 (1766).
Hirundo alpina, *Scop. Ann.* i, p. 166 (1769).
Cypselus melba, *Illiger, Prodr.* p. 230; *Blyth, Cat.* p. 85; *Layard, A. M. N. H.* (2) xii, p. 167; *Adams, P. Z. S.* 1859, p. 175; *Jerdon, B. I.* i, p. 175; *id. Ibis*, 1871, p. 354; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 18; *McMaster, J. A. S. B.* xl, pt. 2, p. 208; *Butler, S. F.* iii, p. 453; v, p. 218; ix, p. 379; *Blanford, S. F.* v, p. 245; *Davidson & Wenden, S. F.* vii, p. 77; *Ball, ibid.* p. 202; *Hume, Cat.* no. 98; *Legge, Birds Ceyl.* p. 317; *Vidal, S. F.* ix, p. 43; *Davidson, S. F.* x, p. 293; *id. Jour. Bom. N. H.*

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* The name *Micropus*, Meyer and Wolf, 1810, which has one year's priority over *Cypselus* has been substituted for the latter by some writers, and especially by Mr. Hartert in the British Museum Catalogue, vol. xvi. But the existence of a Linnæan genus *Micropus* in Botany affords a fair reason for adhering to the well-known name of *Cypselus* for typical Swifts. The generic name *Micropus* (1837) used by Sharpe and Oates (*ante*, Vol. I. p. 294) for a genus of Bulbuls, is of later date than Meyer and Wolf's genus, and must be changed to *Microtarsus*, Eyton (1839).

Soc. i, p. 177; *Littledale, ibid.* pp. 31, 196; *Davison, S. F.* x, p. 347; *Barnes, Birds Bom.* p. 85; *id. Journ. Bom. N. H. Soc.* iii, p. 47; iv, p. 4; *St. John, Ibis,* 1889, p. 155; *Oates in Hume's N. & E.* 2nd ed. iii. p. 20.

Cypselus alpinus, *Jerdon, Mad. Jour. L. S.* xi, p. 235 (1840).

Micropus melba, *Boie, Isis,* 1844, p. 165; *Hartert, Cat. B. M.* xvi, p. 438.

Coloration. Upper parts, sides of head and neck, a broad band across the upper breast, and the lower tail-coverts brown, varying slightly in depth of tint, nearly uniform in old birds, the feathers darker near the end, and with whitish edges in young individuals; chin, throat, lower breast, and abdomen white, feathers sometimes black-shafted; under wing-coverts always with whitish edges, especially near the bend of the wing.

Bill black; iris dark brown; legs and feet blackish purple.

Length about 8·5; tail 3; wing 8·5, tarsus 0·6. The tail is deeply forked, the outer feathers being about ·75 inch longer than the middle pair.

Distribution. Europe as far north as the Alps, Northern Africa, South-western Asia, India, and Ceylon. This bird is resident, and breeds in the Himalayas, on rocky precipices amongst the Western Gháts, and doubtless in other hilly parts of the Peninsula. The nests and eggs have been taken by Miss Cockburn on the Nilgiris near Kotagiri, and nests have been seen by Mr. Davidson near Násik, and by Mr. Littledale in Kashmir; whilst the hills of Ceylon (*Legge*), the cliffs of Gersoppa (*Jerdon*), Satara (*Davidson*), and Gawilgurh in Berar (*McMaster*) have been shown to be probable breeding-places. The Alpine Swift may be seen at times throughout the peninsula, and it has been recorded from Darjiling and Assam, but not farther east.

Habits, &c. This fine Swift is probably, with the exception of the larger species of *Chætura*, the swiftest and most powerful flyer amongst birds. It roosts and breeds in companies on rocky cliffs, but flies enormous distances each day, generally in scattered flocks, and may be found hawking insects in the air hundreds of miles from its roosting-place. It has a shrill cry, often uttered during flight. The nests have walls about an inch thick made of feathers. dry grass, &c., firmly cemented together by the saliva of the birds; they are 4 or 5 inches in diameter, not lined. Several nests are often clustered together. The eggs are laid in Europe about May and June; they are white, elongate, 3 or 4 in number, and measure about 1·2 by ·75.

1069. **Cypselus apus.** *The European Swift.*

Hirundo apus, *Linn. Syst. Nat.* i, p. 344 (1766).

Cypselus apus, *Ill. Prodr.* p. 230; *Blyth, Cat.* p. 85; *Horsf. & M. Cat.* i, p. 109; *Adams, P. Z. S.* 1859, p. 175; *Jerdon, B. I.* i, p. 177; *id. Ibis,* 1871, p. 354; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 18; *Hume, S. F.* i, p. 165; *id. Cat.* no. 99; *Barnes, Birds Bom.* p. 85; *St. John, Ibis,* 1889, p. 156.

Cypselus acuticauda, *Blyth MS., Jerdon, B. I.* iii, p. 870 (1864); *Blyth, Ibis,* 1865, p. 45; 1866, p. 339; *Jerdon, Ibis,* 1871, p. 355; *Hume, S. F.* ii, p. 156; *id. Cat.* no. 99 bis.

Cypelus pekinensis, *Swinhoe, P. Z. S.* 1870, p. 435; 1871, p. 345; *Brooks, S. F.* iii, p. 231; *Scully, S. F.* iv, p. 132; x, p. 100; *id. Ibis,* 1881, p. 428; *Hume, S. F.* vii, p. 365; viii, p. 411; *id. Cat.* no. 99 quat.; *Sharpe, Yarkand Miss., Aves,* p. 112.

Micropus apus (& M. pekinensis, subsp.), *Hartert, Cat. B. M.* xvi, pp. 442–444.

Coloration. Except the chin and middle of the throat, which are whitish, generally with indications of dark shaft-stripes, the whole plumage is dark brown, or blackish brown, with a greenish gloss. In younger specimens the forehead is pale, and the feathers, especially on the crown, wing-coverts (above all the under coverts near the edge of the wing), and abdomen, have pale edges.

Bill blackish brown; iris dark brown; feet purplish brown.

Length about 7; tail 3; wing 7; tarsus 0·5; the outer exceed the middle rectrices by about an inch or rather more.

Distribution. A migratory bird, breeding throughout the greater part of the Palæarctic region, and spending the winter chiefly in Africa. It is found in Kashmir and the Western Himalayas generally, and in Afghanistan. A single specimen was shot at Port Blair, Andaman Islands, on July 30th, 1873, but the species has not been observed in the Eastern Himalayas, Assam, or Burma.

Habits, &c. This is a bird of powerful flight, though inferior to the Alpine Swift. It is almost constantly on the wing in the daytime hawking insects, generally high in the air, or playing about in flocks, and uttering its harsh screaming call. It roosts and breeds on high buildings and cliffs, much as *C. affinis* does, but it has not been observed to breed within Indian limits, where it is, as a rule, only a winter visitor.

1070. **Cypselus murinus.** *The Pale Brown Swift.*

Cypselus murinus, *Brehm, Vollständ. Vogelfang,* p. 46 (1855).

Cypselus pallidus, *Shelley, Ibis,* 1870, p. 445; 1871, p. 47; *Hume, S. F.* vii, p. 365; viii, p. 411; *id. Cat.* no. 99 ter.

Micropus murinus (*subsp. of* M. apus), *Hartert, Cat. M.* xvi, p. 446.

Similar to *C. apus,* but distinctly paler; greyish brown (mouse-brown) almost throughout; the white throat more extended and passing more into the brown on its edges. On the abdomen the dark subterminal bands and whitish edges of the feathers appear persistent at all ages. Wing 6·5 to 6·7, or a little shorter than in *C. apus.*

Distribution. The desert region; Northern Africa (and occasionally Southern Europe) and South-western Asia. This species is probably non-migratory, and has been obtained in Sind and Baluchistan.

1071. **Cypselus pacificus.** *The Large White-rumped Swift.*

Hirundo pacifica, *Latham, Ind. Orn. Suppl.* p. lviii (1801).
Cypselus vittatus, *Jard. & Selby, Ill. Orn.* iv. pl. 39 (1840); *Blyth, Cat.* p. 85; *Horsf. & M. Cat.* i, p. 385; *Blyth, Ibis,* 1863, p. 369.
Cypselus pacificus, *Blyth, J. A. S. B.* xiv, pp. 212, 548; *Jerdon, Ibis,* 1871, p. 355; *Hume & Oates, S. F.* iii, p. 43; *Blyth & Wald. Birds Burm.* p. 84; *Hume & Dav. S. F.* vi, p. 48; *Hume, Cat.* no. 101 bis; *id. S. F.* xi, p. 31; *Hume & Inglis, S. F.* ix, p. 246; *Oates, B. B.* ii, p. 1; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 573.
Micropus pacificus, *Hartert, Cat. B. M.* xvi, p. 448.

Coloration. Upper plumage blackish brown; the feathers in young birds with pale edges, that grow indistinct in older specimens; a broad white band, the feathers black-shafted, across the rump; chin and throat whitish, the shafts dark; rest of lower parts brown, each feather with a subterminal blackish band and a whitish edge at all ages.

Bill black; iris deep brown; feet purplish black (*Davison*).

Length 7; tail 3·2; wing 7; tarsus 0·45; the outer exceed the middle tail-feathers by about 1·25 inch.

Distribution. Assam, Cachar, and Manipur, throughout the Burmese countries and the regions to the eastward, from Japan to Australia.

Habits, &c. But little known; it is even uncertain whether this species is resident in Burma. It was seen by Oates, generally in large flocks, flying at a considerable height, during the greater part of the year, but he doubts if it breeds in the country. It is known to breed on rocks and houses in islands off the coast of China.

1072. **Cypselus leuconyx.** *Blyth's White-rumped Swift.*

Cypselus leuconyx, *Blyth, J. A. S. B.* xiv, p. 212; *id. Cat.* p. 85; *Jerdon, Mad. Jour. L. S.* xiii, pt. 2, p. 144 (1844); *Horsf. & M. Cat.* i, p. 109; *Jerdon, B. I.* i, p. 179; *id. Ibis,* 1871, p. 354; *Sclater, P. Z. S.* 1865, p. 600; *Blyth, Ibis,* 1865, p. 45; 1866, p. 340; 1870, p. 161; *Tytler, Ibis,* 1868, p. 195; *Hume, S. F.* iii, p. 44; *id. Cat.* no. 101; *Butler, S. F.* ix, p. 379; *Barnes, Birds Bom.* p. 86.
Cypselus pacificus, *apud Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 18; *nec Lath.*
Micropus leuconyx, *Hartert, Cat. B. M.* xvi, p. 450.

The White-clawed Swift, Jerdon.

Coloration similar to that of *C. pacificus*, but dimensions much less, so as fully to justify separation. The feet (not the claws) are pale coloured, almost albescent in some specimens (*Hume*).

Bill blackish; iris dark brown; feet flesh-colour (*Delmé Radcliffe*).

Length about 6 inches; tail 2·5; wing 6; tarsus ·4; the outer exceed the middle rectrices by about ·75 inch.

Distribution. Common in the North-western Himalayas at moderate elevations "between the outer ranges and the higher and more interior hills" (*Jerdon*); probably resident. Jerdon states that he obtained a specimen in the western part of the Deccan and several in Malabar, where it frequents rocky hills, but no one appears to have observed specimens in the Peninsula since Jerdon wrote.

1073. **Cypselus affinis.** *The Common Indian Swift.*

Cypselus affinis, *Gray & Hardw. Ill. Ind. Zool.* i, pl. 35, fig. 2 (1832); *Jerdon, Mad. Jour. L. S.* xi, p. 235; *Tickell, J. A. S. B.* xvii, p. 303; *Blyth, Cat.* p. 86; *Horsf. & M. Cat.* i, p. 106; *Adams, P. Z. S.* 1859, p. 175; *Jerdon, B. I.* i, p. 177; *Blyth, Ibis*, 1866, p. 339; *Hume, S. F.* i, p. 166; *Aitken, S. F.* iii, p. 214; *Ball, S. F.* vii, p. 202; *Hume, Cat.* no. 100; *Scully, S. F.* viii, p. 234; *Legge, Birds Ceyl.* p. 319; *Vidal, S. F.* ix, p. 44; *Butler, ibid.* p. 379; *Davison, S. F.* x, p. 347; *Oates, B. B.* ii, p. 3 (note); *id. in Hume's N. & E.* 2nd ed. iii, p. 21; *Barnes, Birds Bom.* p. 86; *Littledale, Jour. Bom. N. H. Soc.* i, p. 31; *Barnes, ibid.* p. 43; iv, p. 4; *Newnham, op. cit.* ii. p. 55; *St. John, Ibis*, 1889, p. 156.
Cypselus nepalensis, *Hodgs. J. A. S. B.* v, p. 780 (1836).
Cypselus montanus, *Jerdon, Mad. Jour. L. S.* xiii, pt. 2, p. 144 (1844).
Cypselus abessynicus, *Streubel, Isis*, 1848, p. 354; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 169; *Hume, Ibis*, 1870, p. 405.
Micropus affinis, *Hartert, Cat. B. M.* xvi, p. 453.

Ababil, Babila, H.; *Pákoli*, Mahr; *Hawa bil-bil*, Saharanpur; *Batasi*, Pahári, Sikhim; *Wæhælaniya, Læniya*, Cing.

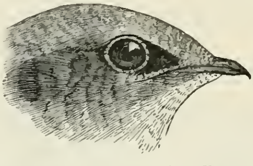

Fig. 49.—Head of *C. affinis*, $\frac{1}{1}$.

Coloration. Very dark brown, almost black, with a distinct gloss above and below; crown and nape paler, forehead and lower tail-coverts paler still; a black spot before the eye and slight pale supercilia; quills glossed with green; a broad white band across the rump, and the chin and throat white, the feathers more or less dark-shafted.

Bill black; iris deep brown; feet vinous brown (*Legge*).

Length about 5·5; tail 1·75; wing 5·25; tarsus ·4. The tail is nearly square, the outer scarcely longer than the middle rectrices.

Distribution. Resident throughout India and Ceylon, but locally distributed; very common in places, wanting in others, ascending the Himalayas to about 6000 feet. To the westward this Swift is found in Kashmir, the Punjab, and Sind, throughout South-western Asia, including Persia and Palestine, and in the greater part of Africa; but it is replaced east of the Bay of Bengal by the next species.

Habits, &c. The Indian Swift is highly gregarious, and is commonly seen about old buildings, being perhaps most common in large towns; it is also found haunting rocky cliffs, and it breeds on cliffs, houses, temples, tombs, &c. Its flight is very like that of *C. apus*, but rather less powerful; its call is similar, but even shriller. Its nests vary in shape and materials; they consist of feathers, grass, or straw, with an occasional admixture of wool, twine, or rags, cemented together with saliva. Generally several nests are found clustered together. In some cases this Swift is said to lay its eggs in deserted Swallows' nests, and this doubtless accounts for some observers having supposed that it used mud in building. The eggs are from 2 to 4, generally 3 in number, white, not glossy as a rule, long ovals, measuring on an average ·87 by ·57. The breeding-season lasts from February to August, both months included, two broods being produced in the year. The same nest is used by a pair several times.

1074. **Cypselus subfurcatus.** *The Malay House-Swift.*

Cypselus subfurcatus, *Blyth, J. A. S. B.* xviii, p. 807 (1849); *id. Cat.* p. 85; *Sclater, P. Z. S.* 1865, p. 602; *Blyth, Ibis*, 1865, p. 41, note; 1870, p. 161; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 153; *Hume, S. F.* ii, p. 524; xi, p. 30; *id. Cat.* no. 100 bis; *Hume & Inglis, S. F.* v, p. 17; *Hume & Dav. S. F.* vi, p. 47; *Oates, B. B.* ii, p. 2.

Micropus subfurcatus, *Hartert, Cat. B. M.* xvi, p. 456.

Very similar to *C. affinis*, but darker, being blackish brown except on the white rump, chin, and throat; head, and especially the under tail-coverts, blackish brown like the other parts, only the forehead paler; tail longer and distinctly subfurcate or emarginate.

Bill black; irides dark brown; legs and feet varying from deep purplish black to flesh-colour.

Length about 5·75 inches; tail 2; wing 5·5; tarsus ·4; outer rectrices ·3 longer than middle pair.

Distribution. Cachar and the Khási hills, not rare; Manipur, and here and there throughout Burma, but very few localities are recorded; China as far north as Amoy, Cochin China, doubtless Siam, the Malay Peninsula, Sumatra, and Java. This Swift abounds in Penang. A single specimen from Chánda was found by Hume in the Calcutta collection: this was doubtless a straggler.

Habits, &c. similar to those of *C. affinis*. Godwin-Austen found this Swift breeding on cliffs near Shillong in June.

Genus **TACHORNIS**, Gosse, 1847.

The toes are arranged in pairs, the 3rd and 4th toes outwards, the 1st and 2nd (inner and hind) inwards. Size small.

The nests are always attached to the leaves of palms (where palm-leaves are employed in thatching huts, the Swifts make their nests on the thatch).

This genus is found throughout the Oriental and Ethiopian regions and in the West Indies. Two species are found within our limits.

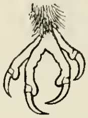

Fig. 50.—Left foot of *T. batassiensis*, $\frac{1}{1}$.

Key to the Species.

Dull earthy brown above	*T. batassiensis*, p. 170.
Glossy blackish brown above	*T. infumatus*, p. 171.

1075. **Tachornis batassiensis.** *The Palm-Swift.*

Cypselus balasiensis (batassiensis), *Gray, in Griffith's An. Kingd., Aves,* ii, p. 60 (1829); *Blyth, Cat.* p. 86.

Cypselus batassiensis, *Horsf. & M. Cat.* i, p. 108; *Jerdon, B. I.* i, p. 180; *Blyth, Ibis,* 1866, p. 340; *Holdsworth, P. Z. S.* 1872, p. 420; *Davidson & Wenden, S. F.* vii, p. 77; *Davidson, ibid.* p. 172; *Ball, ibid.* p. 202; *Cripps, ibid.* p. 257; *Hume, Cat.* no. 102; *Vidal, S. F.* ix, p. 44; *Butler, ibid.* p. 379; *Legge, Birds Ceyl.* p. 322; *Hume, S. F.* x, p. 348; *Barnes, Birds Bom.* p. 87; *Cripps, S. F.* xi, p. 31; *Oates in Hume's N. & E.* 2nd ed. iii, p. 25; *St. John, Ibis,* 1889, p. 156.

Cypselus palmarum, *Gray in Hardw. Ill. Ind. Zool.* i, pl. 35, fig. 1 (1832); *Jerdon, Mad. Jour. L. S.* xi, p. 236; *Hume, N. & E.* i, p. 87; *Butler, S. F.* iii, p. 454.

Tachornis batassiensis, *Hartert, Cat. B. M.* xvi, p. 466.

Tári ababil, Tal-chatta, Patta deuli, H.; *Batassia, Chamchiki,* Beng.; *Ambattan Katthi,* Tamul; *Wæhælaniya,* Cing.

Coloration. Dull brown above, head slightly darker, wing and tail-feathers much darker; beneath pale greyish brown, chin and throat palest.

Bill black; irides reddish; feet dusky brown.

Length about 5·25; tail 2·6; wing 4·5; tarsus ·4; tail deeply forked, outer rectrices about 1·2 inches longer than middle pair.

Distribution. Peninsula of India and Ceylon wherever there are fan-palms (*Borassus flabelliformis*). Wanting in the Punjab and Sind, and found in Rajputana only at Mount Abu. Common throughout Bengal and as far east as Dibrugarh in Assam (*Cripps*), but replaced in the Assam hills and in Burma by the next species.

Habits, &c. This Swift keeps to the neighbourhood of the palms on which it builds its nest. The flight is, as Jerdon says, rather irregular and not very speedy. The nest is attached to the underside of a palm-leaf, usually to one of those that hang bent downwards, and consists of a small pocket-like cup, inserted in one of the furrows of the leaf, and made of vegetable down or small feathers glued together by the salivary secretion of the bird. Usually the nest is on the fan-palm (tar or toddy tree), but occasionally on the betel-nut (*Areca*). This bird breeds probably twice in the year, about March and July in Northern India, but from October to April in Ceylon. The eggs are generally three in number, white, long ovals, measuring on an average ·71 by ·46.

1076. **Tachornis infumatus.** *The Eastern Palm-Swift.*

Cypselus infumatus, *Sclater, P. Z. S.* 1865, p. 602; *Hume, Ibis,* 1870, p. 533; *Jerdon, Ibis,* 1871, p. 355, pl. x; *Walden in Blyth's Birds Burm.* p. 85; *Hume & Oates, S. F.* iii, p. 44; *Hume & Dav. S. F.* vi, pp. 48, 497; *Hume, Cat.* no. 102 bis; *id. S. F.* xi, p. 32; *Bingham, S. F.* viii, p. 192; ix, p. 149; *Oates, B. B.* ii, p. 4; *id. in Hume's N. & E.* 2nd ed. iii, p. 27.

Cypselus tectorum, *Jerdon, P. A. S. B.* 1870, p. 61; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 94.

Cypselus minusculus, *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 383.

Tachornis infumata, *Hartert, Cat. B. M.* xvi, p. 467.

Pyan-hlwa, Burmese (applied to all Swifts).

Coloration similar to that of *T. batassiensis*, but much darker, upper parts blackish brown, wing and tail-feathers black above with a slight purplish gloss; lower plumage smoky brown, throat slightly paler.

Bill and feet black; iris brown (*Oates*).

Length about 5·2 inches; tail 2·2; wing 4·6; tarsus ·35; tail less forked than in *T. batassiensis*; the outer tail-feathers exceed the middle pair by ·9 inch.

Distribution. Hill-tracts south of the Assam valley and throughout the Burmese countries, to Southern China, the Malay Peninsula, Borneo, and Java.

Habits, &c. precisely similar to those of *T. batassiensis*, this bird haunting palms (*Borassus* and *Areca*) and breeding in them. In the Nága and Gáro hills, where the people thatch their huts with two layers of palm-leaves, this Swift attaches its nest to the upper side of the leaves in the lower layer.

Subfamily CHÆTURINÆ.

This subfamily contains the Spiny-tailed Swifts, and the Swiftlets which make the edible nests.

Key to the Genera.

Shafts of rectrices very stiff, the ends projecting beyond the webs ……………………	Chætura, p. 172.
Shafts of rectrices pliable, no projecting points.	Collocalia, p. 175.

Genus **CHÆTURA**, Stephens, 1825.

The principal character of this genus is that all the tail-feathers have rigid shafts, the ends of which project for some distance beyond the web. The tarsi are naked as in other members of the subfamily; feet as in *Cypselus*; claws stout and much curved. Wings very long and pointed, first quill longest.

This genus of Swifts occurs throughout Eastern Asia, the Oriental and Australian regions, Tropical Africa, and nearly the whole of America. Four species occur within Indian limits.

Key to the Species.

a. Large, wing 7 to 8 inches.	
a'. Chin and throat white ………………	*C. nudipes,* p. 172.
b'. Chin and throat brown ………………	*C. indica,* p. 173.
b. Small, wing 4 to 5 inches.	
c'. Rump and abdomen white; upper tail-coverts black………………………………	*C. sylvatica,* p. 174.
d'. Rump and upper tail-coverts light grey; abdomen black……………………	*C. leucopygialis,* [p. 175.

1077. **Chætura nudipes.** *The White-necked Spine-tail.*

Chætura nudipes, *Hodgs. J. A. S. B.* v, p. 779 (1836); *Deless. Voy. de l'Inde, Hist. Nat.* p. 25, pl. 9; *Hume, Cat.* no. 97; *id. S. F.* ix, pp. 230, 286; *Hartert, Cat. B. M.* xvi, p. 474.
Acanthylis fusca, *apud Blyth, Cat.* p. 84; *nec Stephens.*
Acanthylis nudipes, *Horsf. & M. Cat.* i, p. 111.
Acanthylis caudacuta, *apud Jerdon, B. I.* i, p. 173; *id. Ibis,* 1871, p. 354; *nec Lath.*
Acanthylis ciris, *apud Blyth, Ibis,* 1866, p. 339; *nec Pallas.*
Chætura gigantea, *apud Hume & Cripps, S. F.* xi, p. 30; *nec Temm.*

Silli-ang tiphi-timbo, Lepcha.

Coloration. A small black preocular spot; crown and sides of head, nape, hind-neck, upper surface of wings and tail, sides of rump and upper tail-coverts blackish brown, glossed with metallic green; inner webs of tertiaries partly or wholly white; back brown, whitish in the middle; chin, throat, a band down the hinder part of the flanks, area behind vent, and lower tail-coverts white; breast and abdomen brown, with a slightly reddish tinge.

Bill black; irides deep brown; legs and feet purplish livid (*Jerdon*).

Length about 8; tail 2; wing 8; tarsus ·6. Tail nearly square, the spinous tips projecting ·15 inch.

Distribution. Throughout the Himalayas from Hazára to Upper Assam. This bird has been shot at Dibrugarh.

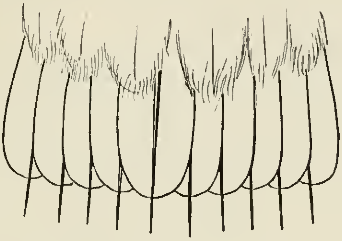

Fig. 51.—Tail of *C. nudipes*, 1/1.

Habits, &c. This and other large Spine-tails are, I believe, absolutely the swiftest of living birds. Their flight far excels that of the Alpine Swift, and I doubt if any Falcon can approach them in speed. They are generally seen in scattered flocks that play about for a time, and disappear at a pace that must be seen to be appreciated. They roost and breed, so far as is known, amongst rocks.

C. caudacuta, which ranges from Siberia to Australia, is closely allied, but is distinguished by its white forehead.

1078. **Chætura indica.** *The Brown-necked Spine-tail.*

Acanthylis caudacuta, *apud Blyth, Cat.* p. 84; *Layard, A. M. N H.* (2) xii, p. 170; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 94; *nec Latham.*

Acanthylis gigantea, *Horsf. & M. Cat.* i, p. 387; *Jerdon, B. I.* i, p. 172; *Beavan, Ibis,* 1867, p. 317; *Blyth & Wald. Birds Burm.* p. 84; *Wardlaw-Ramsay, Ibis,* 1877, p. 459; *nec Temm.*

Chætura indica, *Hume, S. F.* i, p. 471 (1873); ii, p. 155; iv, pp. 223, 286; xi, p. 30; *id. Cat.* no. 96; *Hume & Inglis, S. F.* v, p. 17; *Hume & Dav. S. F.* vi, p. 46; *Hume & Bourdillon, S. F.* vii, p. 34; *Davison, S. F.* x, p. 347; *Hartert, Cat. B. M.* xvi, p. 475.

Hirundinapus giganteus, *apud Walden, Ibis,* 1874, p. 131; *nec Temm.*

Chætura gigantea, *apud Jerdon, Mad. Jour. L. S.* xiii, pt. 2, p. 144; *Blyth, J. A. S. B.* xi, p. 885; *Hume, S. F.* iv, pp. 223, 287; *id. Cat.* no. 96 bis; *Hume & Dav. S. F.* vi, p. 46; *Legge, Birds Ceyl.* p. 314.

Hirundinapus giganteus & H. indicus, *Oates, B. B.* ii, p. 5.

Coloration. A large velvety black spot before the eye, with a white spot in front extending to the nostril; crown and sides of head, hind-neck, sides of rump and upper tail-coverts, upper surface of wings and tail blackish brown, with dark metallic green gloss; back pale brown, darker on the edges; lower parts rich brown; chin and throat much paler, but the feathers of the latter with dark tips; a longitudinal band on the flanks behind the thighs; area behind vent and lower tail-coverts white.

Bill black; irides dark brown; legs and feet pale fleshy pink (*Baker*).

Length about 9; tail 2·6; wing 8; tarsus ·68. The tail is slightly wedge-shaped, and the shafts of the feathers are very strong and project nearly half an inch.

Distribution. Ceylon and Southern India; not observed north of lat. 12° in the Peninsula; commonest about the Nilgiris and other ranges; also Cachar, the Assam hills, and Manipur, throughout the Burmese countries, apparently passing farther south into the allied *C. gigantea*, which is only distinguished by wanting the white loral spots. The specimen from Tenasserim referred by Hume to *C. gigantea*, though not belonging to that race, may be an intermediate form. The two are merely races.

Habits, &c. Similar to those of *C. nudipes*, these Swifts being equal, or possibly even superior, in speed. So wonderful is their flight that Mr. H. R. P. Carter remarked that a flock of Alpine Swifts, passing over immediately after some of the present species, "seemed to fly like Owls after the arrow-like speed of the Spinetails." He found that those he shot had fed on beetles, green bugs, sand-wasps, and grasshoppers. The nests were discovered by Mr. E. C. S. Baker in the North Cachar hills, on April 26th, and described by him in the 'Asian.' They were large, shallow, oval cups attached to the walls of (artificial) limestone caves, and composed of moss and mud. They measured about 6 by 3½ inches outside, 4½ by 3 inside, and nearly an inch deep. Only fragments of eggs, which were white and devoid of gloss, were found, but in one nest were three young birds.

1079. **Chætura sylvatica.** *The White-rumped Spine-tail.*

Acanthylis sylvatica, *Tickell, J. A. S. B.* xv, p. 284 (1846); *Jerdon, B. I.* i, p. 170; *id. Ibis*, 1871, p. 354; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 169; *Hume, J. A. S. B.* xxxix, pt. 2, p. 114; *Ball, S. F.* iii, p. 289; *Walden, Ibis*, 1876, p. 356.

Chætura sylvatica, *Sclater, P. Z. S.* 1865, p. 614; *Ball, S. F.* vii, p. 202; *Hume, Cat.* no. 95; *Davison, S. F.* x, p. 346; *Hartert, Cat. B. M.* xvi, p. 489.

Coloration. Upper parts black or blackish brown, with slight green gloss; a broad white band across the rump; chin, throat, and breast greyish brown; abdomen and lower tail-coverts white, the two colours passing into each other; wing beneath blackish and glossy. In young birds the white feathers of the rump, abdomen, and lower tail-coverts have black shafts.

Bill, legs, and feet black; iris dark brown.

Length about 4·25; tail 1·5; wing 4·2; tarsus ·4. The under tail-coverts extend nearly to the end of the tail.

Distribution. The forest country from Bengal to the Godávari and west as far as the Wyne Gunga, also Seoni in the Central Provinces, Garhwál and Sikhim in the Himalayas, the Wynaad, and Coonoor in the Nilgiris. Widely spread but local.

Habits, &c. A forest species, generally seen in smaller or larger parties hawking insects amongst high trees, especially near streams, or frequenting open cultivated spaces in the jungle. The flight is not, I should say, much more rapid than that of the Palm-Swift. Nidification unknown.

1080. **Chætura leucopygialis.** *The Grey-rumped Black Spine-tail.*

Acanthylis leucopygialis, *Blyth, J. A. S. B.* xviii, p. 809 (1849); *id. Cat.* p. 85; *id. Ibis*, 1866, p. 339.
Acanthylis coracinus, *Müll. Bonap. Consp. Av.* p. 64 (1850).
Chætura coracina, *Sclater, P. Z. S.* 1865, p. 614; *Hume, S. F.* iii, p. 318; *Hume & Dav. S. F.* vi, p. 45.
Chætura leucopygialis, *Hume, S. F.* vii, p. 518; *id. Cat.* no. 95 bis; *Hartert, Cat. B. M.* xvi, p. 490.
Rhaphidura leucopygialis, *Oates, B. B.* ii, p. 6.

Coloration. Black, with a bluish gloss throughout, above and below, except the rump and long upper tail-coverts, which are greyish white (pearly grey) with narrow black shafts.

Bill black; irides dark brown; legs and feet livid purple.

Length about 4·75; tail 1·7; wing 4·9; tarsus ·4. The upper tail-coverts extend to the end of the webs of the tail-feathers; the naked shafts of the latter project ·3 to ·4 inch.

Distribution. The extreme south of Tenasserim, ranging throughout the Malay Peninsula to Sumatra and Borneo.

Habits, &c. very similar to those of *C. sylvatica*, but by Davison's account this appears to be a swifter bird.

Genus **COLLOCALIA**, Gray, 1840.

Feet small; the hind toe directed backwards normally and only partially reversible. Tail-feathers of ordinary form and the shafts not rigid. Second quill longest; tail slightly forked.

This genus contains the birds generally designated Swiftlets by Indian ornithologists, some of which build the "edible nests" of commerce. These nests are shaped like a half saucer, and some of them are white, glistening, and composed of a substance resembling isinglass. This was formerly supposed to be seaweed, then ascertained to be a secretion produced by the bird, and finally shown by Blyth (J. A. S. B. xiv, p. 210; Ibis, 1860, p. 323) to be derived from the bird's salivary glands, which are greatly developed in both sexes at the nesting-season. Hume showed that in the Andamans the pure white nests are always made by one species, *C. francica*, whilst other species use extraneous substances such as grass and feathers cemented together by the inspissated saliva, and their nests are consequently either less valuable, or, in some kinds, not worth collecting. All lay two white, very elongate cylindrico-ovate eggs, and make their nests in caves. During the day the birds hunt about for insects, frequently travelling great distances for the purpose; Jerdon relates how the birds at Vingorla Rocks did not return to their roosts till 9 p.m., having been away all day. The flight is rapid. None, so far as is known, are truly migratory, though they wander over considerable distances. The genus inhabits the greater part of the Oriental and Australian regions.

Key to the Species.

a. Abdomen brown like throat and breast.	
a'. Tarsi naked.	
a''. No pale band across rump	*C. fuciphaga*, p. 176.
b''. A pale band across rump	*C. francica*, p. 178.
b'. Tarsi feathered.	
c''. Smaller, wing 5; pale rump-band indistinct	*C. brevirostris*, p. 177.
d''. Larger, wing 5·3; pale rump-band distinct	*C. innominata*, p. 177.
b. Abdomen white; tarsi naked..............	*C. linchi*, p. 178.

1081. **Collocalia fuciphaga.** *The Indian Edible-nest Swiftlet.*

Hirundo fuciphaga, *Thunb. Kon. Svensk. Vet.-Ak. nya Handl.* xxxiii, p. 151, pl. iv (1812).
Hirundo unicolor, *Jerdon, Mad. Jour. L. S.* xi, p. 238 (1840); xiii, pt. 1, p. 173; xiii, pt. 2, p. 144.
Cypselus concolor, *Blyth, J. A. S. B.* xi, p. 886 (1842).
Collocalia unicolor, *Blyth, J. A. S. B.* xiv, pp. 209, 212; *Hume, S. F.* i, pp. 295, 296; *id. Cat.* no. 103; *Hume & Bourd. S. F.* iv, p. 374; *Vidal & Hume, S. F.* ix, p. 44; *Davison, S. F.* x, p. 348; *Terry, ibid.* p. 470; *Barnes, Birds Bom.* p. 87; *Oates in Hume's N. & E.* 2nd ed. iii, p. 28.
Collocalia nidifica, *Gray, Gen. B.* i, p. 55 (1845); *Blyth, Cat.* p. 86, pt.; *Horsf. & M. Cat.* i, p. 98, pt.; *Jerdon, B. I.* i, p. 182, pt.
Callocalia brevirostris, *apud Layard, A. M. N. H.* (2) xii, p. 168, *nec McClell.*
Collocalia fuciphaga, *Wallace, P. Z. S.* 1863, p. 384; *Holdsworth, P. Z. S.* 1872, p. 420; *Hartert, Cat. B. M.* xvi, p. 498.
Collocalia francica, *apud Walden, Ibis,* 1874, p. 132, partim; *Legge, Birds Ceyl.* p. 324; *Morgan, Ibis,* 1875, p. 313; *nec Gmel.*

Coloration. Very dark brown above, almost black, with purplish or greenish gloss on the wings and tail; rump not paler; lower parts greyish brown, the feathers sometimes dark-shafted. Tarsi quite naked.

Irides dark brown (*Bourdillon*).

Length about 4·75; tail 2·1; wing 4·6; tarsus ·4. The middle tail-feathers are about half an inch short of the outer.

Distribution. Ceylon and the neighbourhood of the Malabar coast as far north as Vingorla, common on the higher hills, Nilgiris, Anamalis, &c. A few birds of this species have also been obtained in the Western Himalayas. Not known elsewhere within our area, but widely distributed in the Malay Archipelago, Papuasia, and the Philippines.

Habits, &c. Those of the genus. The nests, found in caves in the Ceylon, Nilgiri, Palni, and Travancore hills, and on Vingorla Rocks, Pigeon Island, and other islets off the Malabar coast, are small shallow cups made of grass, moss, and feathers cemented together by inspissated saliva. They always contain extraneous materials and are never pure white. The breeding-season on the hills is from March to June, but on the coast rather earlier. The eggs, two in number, measure on an average ·83 by ·54.

1082. **Collocalia brevirostris.** *The Himalayan Swiftlet.*

Hirundo brevirostris, *McClelland, P. Z. S.* 1839, p. 155.
Collocalia nidifica, *Jerdon, B. I.* i, p. 182, pt.; *Brooks, S. F.* iii, p. 232.
Collocalia fuciphaga, *apud Blanf. J. A. S. B.* xli, pt. 2, p. 44; *nec Thunb.*
Collocalia brevirostris, *Hume, S. F.* iii, p. 232; ix, p. 290; xi, p. 32; *Hartert* (C. fuciphagæ *subsp.*), *Cat. B. M.* xvi, p. 501.
Collocalia unicolor, *apud Scully, S. F.* viii, p. 235; *nec Jerdon.*

Coloration. Almost identical with that of *C. fuciphaga*, but the upper parts are a little darker in general, whilst the rump is slightly but distinctly paler than the back. Tarsi always feathered in front.

Bill black; irides dark brown; tarsi and toes brownish fleshy (*Hume*).

Length about 5·4; tail 2·2; wing 5; tarsus ·4. The outer tail-feathers exceed the middle pair by ·25 to ·4 inch.

Distribution. Throughout the Himalayas as far west as Dalhousie, up to considerable elevations (I have seen this species at 12,000 feet in Sikhim), also in Assam and Manipur.

Habits, &c. Those of the genus. Nidification unknown.

1083. **Collocalia innominata.** *Hume's Swiftlet.*

Collocalia innominata, *Hume, S. F.* i, p. 294 (1873); ii, pp. 160, 493; ix, p. 112; *id. Cut.* no. 103 ter; *Hume & Dav. S. F.* vi, p. 49; *Oates, B. B.* ii, p. 7; *Hartert, Cat. B. M.* xvi, p. 503.
Collocalia maxima, *Hume, S. F.* iv, p. 223 (descr. nulla).

Coloration. Upper parts blackish brown; crown and nape darker, sometimes forming a distinct cap; wings and tail black with purplish or greenish gloss; rump pale greyish brown, with dark shafts; lower parts greyish brown, the feathers dark-shafted.

Tarsi feathered in front throughout; bill and feet black; legs blackish brown (*Davison*).

Length 5·25; tail 2·2; wing 5·3; tarsus ·46.

Distribution. Southern Tenasserim and the Andaman Islands. A skin has also been obtained at Selangore in the Malay Peninsula. The nidification is unknown.

1084. **Collocalia francica.** *The Little Grey-rumped Swiftlet.*

Hirundo francica, *Gmel. Syst. Nat.* i, pt. ii, p. 1017 (1788).
Collocalia francica. *G. R. Gray, List Spec. Birds B. M., Fissirostres,* p. 21 (1848); *Walden, Ibis,* 1874, p. 132 (part.); 1876, p. 356 (part.); *Hartert, Cat. B. M.* xvi, p. 503.
Macropteryx spodiopygia, *Peale, U.S. Expl. Exped.* p. 170, pl. 49 (1848).
Collocalia spodiopygia, *Hume, S. F.* i, p. 296; ii, pp. 102, 160; iii, p. 318; *id. Cat.* no. 103 quat.; *Hume & Dav. S. F.* vi, p. 51; *Oates, B. B.* ii, p. 8; *id. in Hume's N. & E.* 2nd ed. iii, p. 35.
Collocalia inexpectata, *Hume, S. F.* i, p. 296; *Hartert, Cat. B. M.* xvi, p. 505 (C. franciсæ *subsp.*).
Collocalia fuciphaga, *apud Blyth, Birds Burm.* p. 85; *nec Thunb.*
Collocalia merguiensis (C. francicæ *subsp.*), *Hartert, t. c.* p. 506.

Zee-wa-so, Burmese (generic).

Coloration. Very similar to that of *C. innominata,* but the size is smaller and the tarsi are naked. The rump-band varies in distinctness, being ill-defined and brownish grey in Andaman birds (*C. inexpectata*), greyish white and well marked in those from Tenasserim (*C. merguiensis*). The pale rump-feathers are always dark-shafted, those of the lower surface sometimes.

Bill black; irides very dark brown; legs and feet brown (*Davison*).

Length 4·75; tail 2·1; wing 4·7; tarsus ·4.

Distribution. Islands of the Pacific and Indian Oceans from Samoa to Mauritius, ranging and breeding throughout the Malay Archipelago to the coasts of Burma (Tenasserim and Arrakan) and the Andaman and Nicobar Islands.

Habits, &c. So far as is known, this bird, which produces the best kind of the edible birds' nests of commerce, keeps mainly to the sea-coast. The nests are entirely, as Hume has shown, composed of inspissated saliva; they are white except where they are fastened to the rock. The breeding-season in the islands of the Bay of Bengal begins in March. Eggs measure ·81 by ·53.

1085. **Collocalia linchi.** *Horsfield's Swiftlet.*

Collocalia fuciphaga, *apud Blyth, J. A. S. B.* xiv, p. 548; xv, p. 22; *id. Cat.* p. 86; *Walden, Ibis,* 1874, p. 135; *nec Thunb.*
Collocalia linchi, *Horsf. & M. Cat.* i, p. 100 (1854); *Pelzeln, Novara, Vög.* p. 39, pl. ii, fig. 2, pl. vi, fig. 2; *Ball, J. A. S. B.* xli, pt. 2, p. 276; *id. S. F.* i, p. 55; *Hume, S. F.* ii, pp. 64, 83, 108, 157; *id. Cat.* no. 103 bis; *Blyth & Wald. Birds Burm.* p. 85; *Hume & Dav. S. F.* vi, p. 49; *Oates, B. B.* ii, p. 10; *id. in Hume's N. & E.* 2nd ed. iii, p. 33; *Hartert, Cat. B. M.* xvi, p. 508.
Collocalia affinis, *Tytler, Beavan, Ibis,* 1867, p. 318; *Blyth, Ibis,* 1868, p. 131; *Walden, Ibis,* 1873, p. 302; *Hume, S. F.* i, p. 296.

Coloration. Upper parts black, glossed with bluish green or purple, the feathers brown at the base; sides of head and neck, chin, throat, and upper breast brown; feathers of remainder of lower parts the same, but with broad white edges, so that the abdomen is all white except the dark shafts; tail and wings black beneath.

Tarsus naked; bill and legs black (*Beavan*).

Length 4; tail 1·5; wing 4; tarsus ·32. Tail nearly square.

Distribution. Andaman and Nicobar Islands, Mergui Archipelago (*Blyth*), Johore and Malacca, Sumatra, Java, and Borneo.

Habits, &c. similar to those of other species. The nests are usually in caves, and according to Hume and Davison, the latter of whom watched the process of building, consist of brown moss firmly agglutinated with saliva. These nests are never collected for sale, as they are not regarded as edible. The present species at Port Blair in the Andamans has taken to buildings, and even makes its nests at times in inhabited rooms. The eggs, five in number, measure about ·7 by ·45.

Subfamily MACROPTERYGINÆ.

Genus **MACROPTERYX**, Swainson, 1831.

The Crested Swifts form a subfamily composed of a single genus, distinguished by their short naked tarsi, and by the wings when folded not extending or scarcely extending beyond the tail. There are, however, several other characters of importance. The plumage is softer than in other Swifts, and there is a patch of silky downy feathers on each flank. The sexes differ, and the plumage of the nestling is unlike that of the adults, both characters not found in other members of the family. The sincipital feathers are more or less elongated and erectile; in some species there are also elongate superciliary or moustachial tufts. The tail is long and forked. The hind toe is not reversible. The posterior portion of the sternum has two foramina, one on each side.

Quite recently, too, it has been shown by Mr. F. A. Lucas (Ibis, 1895, p. 300) that the deep plantar tendons in *Macropteryx coronata* differ from those of other *Cypseli*. The *flexor longus hallucis* gives off a slip to the hallux (which is not supplied by the *f. perf. digitorum*), and then goes on to blend, not with the *f. perf. digitorum* as a whole, but with that branch of it which goes to supply the fourth digit.

The nidification on trees is described under *M. coronata*. Only a single egg is laid. The genus is found in the Oriental region and Papuasia, three species occurring within our limits.

Key to the Species.

a. Sincipital crest long; no superciliary or moustachial tufts.
  a'. Back bluish grey .... *M. coronata*, p. 180.
  b'. Back greenish bronze .... *M. longipennis*, p. 181.
b. Crest smaller; white superciliary and moustachial stripes elongated into tufts behind.. *M. comata*, p. 182.

1086. **Macropteryx coronata.** *The Indian Crested Swift.*

Hirundo coronata, *Tickell, J. A. S. B.* ii, p. 580 (1833).
Macropteryx coronata, *Blyth, J. A. S. B.* xv, p. 21; *id. Cat.* p. 87; *Layard, A. M. N. H.* (2) xii, p. 167; *Fairbank, S. F.* iv, p. 254; *Blyth & Wald. Birds Burm.* p. 86; *Wardl.-Rams. Ibis,* 1877, p. 458; *Oates, B. B.* ii, p. 12; *id. in Hume's N. & E.* 2nd ed. iii, p. 36; *Hartert, Cat. B. M.* xvi, p. 512.
Dendrochelidon coronata, *Jerdon, B. I.* i, p. 185; *Beavan, Ibis,* 1865, p. 405; 1869, p. 405; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 169; *Hume, J. A. S. B.* xxxix, pt. 2, p. 114; *Ball, S. F.* ii, p. 384; vii, p. 202; *Hume & Dav. S. F.* vi, p. 51; *Legge, Birds Ceyl.* p. 328; *Hume, Cat.* no. 104; *Vidal, S. F.* ix, p. 48; *Butler, ibid.* p. 380; *Parker, ibid.* p. 476; *Davidson, S. F.* x, p. 294; *Terry, ibid.* p. 470; *Swinhoe & Barnes, Ibis,* 1885, p. 60; *Barnes, Birds Bom.* p. 88; *Littledale, Jour. Bom. N. H. Soc.* i, p. 196.

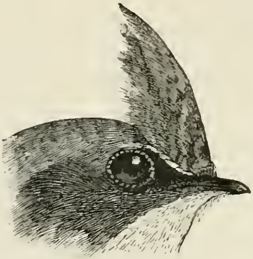

Fig. 52.—Head of *M. coronata,* ½.

Coloration. Male. Upper plumage and sides of neck, throat, breast, and flanks bluish ashy; sincipital crest and upper wing-coverts darker and glossed with bluish green; wing and tail-feathers dark brown with a green gloss; a very narrow white superciliary line; lores velvety black; ear-coverts and a moustachial stripe from them to the chin chestnut; chin the same but paler; abdomen and lower tail-coverts white, which passes gradually into the grey of the breast and flanks.

Female without any chestnut; ear-coverts blackish grey, bordered below by a narrow whitish stripe from the gape; chin grey like the throat and breast.

Young barred; the feathers of the upper plumage with broad brownish-grey borders, white at the edge, those of the lower parts with brown subterminal bars.

Bill black; iris dark brown; eyelids plumbeous; legs pinkish brown (*Oates*).

Length about 9·5; tail 5·25 to end of outer, 1·75 to end of middle feathers; wing 6·2; tarsus ·4.

Distribution. The better wooded parts of India and Ceylon, and throughout Burma, except in Southern Tenasserim; also in Siam. This Swift occurs along the base of the Himalayas as far west as Dehra Dún; it is wanting in the Punjab, Sind, and the parts of

Rajputana, the Deccan, Carnatic, &c. that are deficient in trees, and is, even where common, very locally distributed.

Habits, &c. The Crested Swift is commonly seen in small parties about groves of trees and pieces of water in or near forest, flying elegantly but not very rapidly for a Swift, and frequently perching on dead branches at the tops of trees. It has a habit when perching of erecting its peculiar sincipital crest. It has, as Jerdon says, a loud parrot-like call, often uttered on the wing and also when perching. It makes a minute saucer-shaped nest, only about 1½ inches in diameter, of flakes of bark and sometimes a few feathers cemented together, and attached to the side of a horizontal dead twig or branch with saliva. The nest is so small that it is with difficulty seen, and the Swift sits on the branch with its body over the nest. The breeding-season is from April to June, and a single egg is laid, white, without gloss, and elongately-oval in shape. An egg in Mr. Hume's collection measured ·85 by ·55 inch, but he looked on this as small.

1087. **Macropteryx longipennis.** *The Malayan Crested Swift.*

Hirundo longipennis, *Rafinesque, Bull. Soc. Philom.* iii, p. 153 (1802).
Hirundo klecho, *Horsf. Trans. Linn. Soc.* xiii, p. 143 (1821).
Macropteryx longipennis, *Swains. Zool. Ill.* ser. 2, ii, pl. 47; *Blyth, Cat.* p. 322; *Oates, B. B.* ii, p. 13; *Hartert, Cat. B. M.* xvi, p. 514.
Dendrochelidon klecho, *Boie, Isis*, 1844, p. 166; *Horsf. & M. Cat.* i, p. 110; *Bernstein, J. f. Orn.* 1859, p. 183, pl. ii, figs. 3, 4, 5 (nest & egg); *Sclater, P. Z. S.* 1865, p. 616; *Kelham, Ibis*, 1881, p. 374.
Dendrochelidon longipennis, *Hume & Dav. S. F.* vi, pp. 52, 498; *Hume, Cat.* no. 104 ter.

Coloration. Crown, nape, back, sides of neck, upper back, scapulars, wing-coverts, and upper tail-coverts metallic greenish bronze, the sincipital crest and wing-coverts tinged with metallic blue as a rule; lower back and rump bluish ashy; tertiaries partly whitish grey; the other wing-feathers and the tail-feathers blackish, with a purple or green gloss; lores velvety black; ear-coverts deep chestnut; chin, throat, breast, and flanks bluish ashy grey, passing into white on the abdomen and lower tail-coverts.

The *female* has the ear-coverts black with a greenish gloss, not chestnut. In the young the plumage is barred; the feathers of the upper parts pale brown, with dark borders and white outer edges; crest-feathers with rufous tips; those of the lower parts whitish with dark edges.

Iris dark brown; legs and feet dull purple (*Kelham*).

Length about 8·5 inches; tail 4, the outer feathers 2 inches longer than the middle pair; wing 6·5; tarsus ·35.

Distribution. The Malay Peninsula, Sumatra, Java, and Borneo, ranging into Tenasserim as far north as Mergui and Nwalabo mountain.

Habits, &c. similar to those of *M. coronata.*

1088. **Macropteryx comata.** *The Tufted Tree-Swift.*

Cypselus comatus, *Temm. Pl. Col.* 268 (1824).
Macropteryx comata, *Blyth, Cat.* p. 87; *Oates, B. B.* ii, p. 14; *Hartert, Cat. B. M.* xvi, p. 517.
Dendrochelidon comata, *Horsf. & M. Cat.* i, p. 110; *Hume, S. F.* iii, p. 318; *id. Cat.* no. 104 bis; *Hume & Dav. S. F.* vi, p. 51.

Coloration. Male. Crown, nape, throat, sides of neck just behind ear-coverts, and upper and under wing-coverts metallic purplish blue; narrow frontal band, long supercilia, chin, and broad moustachial stripes, extending back below and beyond the ear-coverts, white; lores black; ear-coverts chestnut; wing and tail-feathers blackish, glossed with purplish blue; back, rump, upper tail-coverts, breast, and abdomen brown, glossed with bronze; lower tail-coverts white.

In the *female* the ear-coverts are metallic blue. The young has probably brown and white edges to the feathers.

Crest small; superciliary and moustachial stripes ending behind in long tufts. Bill black; irides dark brown; legs and feet purplish pink (*Davison*).

Length about 6·3 inches; tail 3, the outer feathers exceeding the middle pair by 1·5; wing 5; tarsus ·25.

Distribution. Malay Peninsula and Archipelago, including Celebes and the Philippines, extending into the extreme south of Tenasserim as far as Choungthanoung, 90 miles south of Mergui.

Suborder *CAPRIMULGI.*

Cæca present and functional. Oil-gland nude. Palate schizognathous, the vomer truncated behind; basipterygoid processes present. Sternum with a broad shallow incision on each side behind. Semitendinosus muscle present. Aftershaft to feathers very small.

Nest none: the eggs, generally two in number, are laid on the ground and (doubtless because of the protection thereby afforded) differ from those of all other Macrochires by being coloured. The young are hatched helpless, but covered with down. All members of this suborder are crepuscular and nocturnal.

A single family.

Family CAPRIMULGIDÆ.

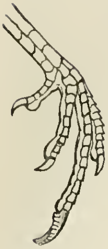

Fig. 53.
Left foot of
C. asiaticus.

Bill short, weak and flexible; gape very wide. Nostrils tubular. Wings long, the second quill generally the longest. Middle toe long, the claw (in the typical forms) pectinated on the inside. Fourth (outer) toe with only 4 phalanges. Plumage soft and finely mottled.

This family is found in nearly all tropical and temperate regions. Two genera are Indian, both belonging to the typical section, with a pectinated claw to the middle toe.

Key to the Genera.

Strong rictal bristles; no ear-tufts.......... CAPRIMULGUS, p. 183.
No rictal bristles; ear-tufts present .... LYNCORNIS, p. 192.

Genus **CAPRIMULGUS**, Linn. 1766.

Wing long and pointed, first primary shorter than second and generally than the third; tail long, more or less rounded. Sexes generally distinguished by the presence of white spots on the wings and tail in males; represented by buff or rufous spots, or else wanting altogether, in females and young birds. In some species, however, the sexes are alike. Strong rictal bristles, generally white at the base. No ear-tufts.

The range is that of the family.

Key to the Species.

a. Tarsus almost naked.
  a′. No distinct black streaks on back.
    a″. Outer tail-feathers tipped white in ♂, buff in ♀ .... *C. mahrattensis*, p. 184.
    b″. Outer tail-feathers white throughout except at tip in ♂, banded and mottled throughout in ♀ .... *C. monticola*, p. 185.
  b′. Distinct but narrow black streaks on back *C. asiaticus*, p. 186.
b. Greater part or whole of tarsus feathered; back with black streaks or spots.
  c′. Two outer pairs of tail-feathers tipped white in ♂.
    c″. Black shaft-stripes in middle of crown only.
      *a*³. A white spot in ♂ on first three primaries; tarsi three-quarters feathered .... *C. europæus*, p. 187.

b^3. A white spot in ♂ on first four primaries; tarsi feathered throughout .... *C. macrurus*, p. 188.
d''. Black spots over nearly whole crown . *C. andamanicus*, p. 190.
d'. Four outer pairs of tail-feathers with subterminal white spots in ♂ .... *C. indicus*, p. 190.

The habits of all Nightjars are similar. They rest usually on the ground amongst vegetation or stones during the day, and issue forth at dusk to feed. Their food consists of insects, and largely of beetles, which they capture, chiefly at all events, on the wing. Their flight is noiseless and tolerably rapid. From time to time they settle on the ground, on a stump of a tree, or a branch, or on a stone, and thence utter a peculiar rather monotonous reiterated note, which varies much in different species. When a Nightjar perches it selects a branch of considerable size, and sits as a rule longitudinally, not across like an ordinary passerine bird, and whenever it alights it rests with its whole body on the ground or perch. Besides their calls most Nightjars have a chuckling note, uttered during flight.

The following terms are generic and apply to all Nightjars:—*Chĭppak* or *Chappa*, H.; commonly *Dab-churi* or *Dabhak* (*dabna* to crouch) and *Andha-chiriya* (blind-bird); *Kápu*, Mahr.; *As kappri gadu*, Tel., also *Kappa pitta* (frog-bird); *Bimbasa*, *Rabasa*, *Omerelliya*, Cing.; *Pathekai* (roadside-bird), *Pay-marretai* (devil-bird), Tamul in Ceylon; *Tamor*, Lepcha; *Wapatshai*, Nága; *Hnet-pyin*, Burmese.

1089. **Caprimulgus mahrattensis.** *Sykes's Nightjar.*

Caprimulgus mahrattensis, *Sykes, P. Z. S.* 1832, p. 83; *id. J. A. S. B.* iii, p. 422; *Horsf. & M. Cat.* i, p. 114; *Blyth, Ibis*, 1862, pp. 304, 386; *Jerdon, B. I.* i, p. 197; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 232; *Hayes Lloyd, Ibis*, 1873, p. 406; *Hume, S. F.* i, p. 167; iii, p. 455; *id. Cat.* no. 113; *C. H. T. & G. F. L. Marshall, S. F.* iii, p. 331; *Fairbank, S. F.* iv, p. 254; *Blanford, East. Pers.* ii, p. 128; *Butler, S. F.* vii, p. 181; ix, p. 381; *Doig, S. F.* viii, p. 372; *Barnes, Birds Bom.* p. 92; *id. Jour. Bom. N. H. Soc.* iv, p. 8, pl. fig. 113 (egg); *Oates in Hume's N. & E.* 2nd ed. iii, p. 49; *Hartert, Cat. B. M.* xvi, p. 561.

Caprimulgus arenarius, *Blyth, J. A. S. B.* xv, p. 21 (1846).

Coloration. Male. General tint of the upper parts sandy grey, mottled and vermiculated with but few and small black streaks and spots, none on the back, whilst those on the head and scapulars consist of transverse spots, each produced in the middle down the shaft of a feather, the rest of the feather buff; sometimes there is a collar of buff spots, but this is often inconspicuous; much buff on the wing-coverts; a large white spot on the middle of the first three primaries; middle tail-feathers pale buffy grey, with distinct but very broken and irregular blackish cross bars; two outermost pairs with pure white ends 1¼–1½ inches long; lower parts fulvous grey with dusky mottling, a white spot on the throat, and the abdomen distinctly barred; lower tail-coverts buff, without bars.

The *female* has the white tips to the outer rectrices shorter than in the male, and often sullied and mottled; the spots on the primaries are generally buff.

Legs and feet pale fleshy brown; claws black; bill and irides dark brown (*Hume*).

Length about 9; tail 4·2; wing 7; tarsus, only feathered at the base, ·8.

Distribution. Throughout North-western India, extending westward to Afghanistan and Baluchistan, eastward to Upper Bengal (Jerdon obtained a specimen near Caragola, south of Purneah) and south to Belgaum, but rare except in Sind and the neighbouring provinces.

Habits, &c. This Nightjar is chiefly met with on sandy ground. It breeds in Sind about May and June, and perhaps at other seasons. The eggs are pale grey or greyish lilac, spotted and blotched with pale sepia-brown, and measure about 1·13 by ·80.

1090. **Caprimulgus monticola.** *Franklin's Nightjar.*

Caprimulgus monticolus, *Franklin, P. Z. S.* 1831, p. 116; *Blyth, Cat.* p. 84; *Horsf. & M. Cat.* i, p. 114; *Jerdon, B. I.* i, p. 198; *Beavan, Ibis,* 1865, p. 406, 1869, p. 406; *Blyth, Ibis,* 1866, p. 342; *Adam, S. F.* i, p. 371; *Ball, S. F.* ii, p. 385; vii, p. 203; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 153; *Blyth & Wald. Birds Burm.* p. 83; *Hume, S. F.* iii, p. 455; x, p. 349; xi, p. 40; *id. Cat.* no. 114; *Butler, S. F.* v, p. 227; ix, p. 381; *Davison, S. F.* v, p. 453; *Hume & Dav. S. F.* vi, p. 59: *Vidal, S. F.* ix, p. 48; *Bingham, ibid.* p. 151; *Davidson, S. F.* x, p. 295; *Macgregor, ibid.* p. 436; *Oates, B. B.* ii, p. 18; *id. in Hume's N. & E.* 2nd ed. iii, p. 51; *C. H. T. Marshall, Ibis,* 1884, p. 409; *Barnes, Birds Bom.* p. 92; *id. Jour. Bom. N. H. Soc.* i, p. 43; iv, p. 8, pl. fig. 114 (egg); *Hartert, Cat. B. M.* xvi, p. 547.

Coloration. Male. General colour above brown or brownish grey, with indistinct black markings and with rufous edges and spots on the scapulars and wing-coverts; no black stripes on the back; a partial collar of buff spots, sometimes inconspicuous; tail-feathers with distinct blackish cross-bands; a large white spot or band in the middle of the first four primaries; two outer pairs of tail-feathers entirely white except at the tip; a white spot on the throat, the white feathers with dark tips, some rufous spots on the breast; rest of lower parts to breast mottled brown, the abdomen and lower tail-coverts buff, with bars on the former only.

The *female* has no white on the tail-feathers, which are all barred throughout, and the spots on the first four primaries are rufous buff.

Bill and gape pale brown; irides dark brown; legs and feet pale fleshy brown (*Bingham*).

Length about 10; tail 4·5; wing 7·5; tarsus, almost entirely naked, ·82.

Distribution. Throughout the greater part of India, from Sámbhar in Rajputana, Mount Abu and Kattywar to Mysore (but not apparently further south, nor in Ceylon); also throughout the Lower Himalayas, in Burma locally as far south as Amherst, in Cochin China and Southern China.

Habits, &c. This bird is badly named, for it is by no means a hill species; its especial haunt appears to be thin forest. In the more jungly parts of the Southern Central Provinces I found it by far the commonest Nightjar. The call is very similar to that of *C. asiaticus.* The eggs are usually cream-coloured, spotted and blotched with faint purple and pale brown, and measure about 1·16 by ·84.

1091. **Caprimulgus asiaticus.** *The Common Indian Nightjar.*

Caprimulgus asiaticus, *Lath. Ind. Orn.* ii, p. 588 (1790); *Gray in Hardw. Ill. Ind. Zool.* i, pl. 34; *Blyth, Cat.* p. 83; *Horsf. & M. Cat.* i, p. 115; *Jerdon, B. I.* i, p. 197; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 232; *Holdsworth, P. Z. S.* 1872, p. 421; *Adam, S. F.* i, p. 371; *James, ibid.* p. 419; *Butler, S. F.* iii, p. 455; ix, p. 380; *Blyth & Wald. Birds Burm.* p. 83; *Hume & Dav. S. F.* vi, p. 59; *Ball, S. F.* vii, p. 203; *Hume, Cat.* no. 112; *Legge, Birds Ceyl.* p. 343; *Vidal, S. F.* ix, p. 48; *Bingham, ibid.* p. 150; *Reid, S. F.* x, p. 20; *Oates, B. B.* ii, p. 17; *id. in Hume's N. & E.* 2nd ed. iii, p. 48; *Barnes, Birds Bom.* p. 91: *id. Jour. Bomb. N. H. Soc.* iv, p. 7, pl. fig. 112 (egg); *Hartert, Cat. B. M.* xvi, p. 558.

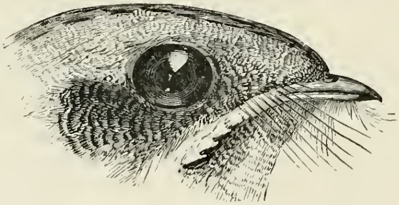

Fig. 54.—Head of *C. asiaticus*, 1/1.

Coloration. Upper parts yellowish grey, with little or no rufous tinge; black elongate spots on the middle of the crown, and very narrow black shaft-stripes on the back; a broad buff collar broken by dusky markings; scapulars richly marked with large black spots and broad bright buff edges; large buff patches on the wing-coverts, first four primaries each with a white spot in the middle; middle tail-feathers like upper plumage, but with ill-marked narrow black cross-bars, outer two pairs tipped white, the outermost pair have frequently the outer webs brown at the tip, but edged with buff throughout; lower plumage buff, indistinctly barred with brown, the breast and throat mottled also; under tail-coverts unbarred; a narrow buffy-white moustachial stripe and a white spot on the throat, the feathers tipped buff and black. Sexes alike.

Bill flesh-colour at base, the upper mandible reddish, tip dark brown; irides brown; legs and feet pinkish brown.

Length about 9·5; tail 4·5; wing 6; tarsus, unfeathered except on the uppermost part, ·8.

Distribution. From Sind and the Punjab throughout India and Ceylon, and in Burma as far south as the neighbourhood of Moulmein, but not in the higher hills nor in large forests. The commonest Indian species.

Habits, &c. This is a bird of the plains and of open and cultivated country, of groves, and gardens and low jungle. It is commonly found near habitations. The call, constantly heard at night, has been aptly compared to the sound made by skimming a stone over ice, the note being repeated slowly at first, then much more quickly. There is also, as usual, a chuckling note, uttered by the bird on the wing. The eggs, two in number, pinkish stone to deep salmon-pink in colour, with faint purplish blotches and brownish spots, are laid at various times from April to July in Northern India, but earlier in Southern India and Ceylon, and in Khandesh in July, August, and September. They measure about 1·04 by ·77.

1092. **Caprimulgus europæus.** *The European Nightjar.*

Caprimulgus europæus, *Linn. Syst. Nat.* i, p. 346 (1766); *Blanf. East. Pers.* ii, p. 127; *id. Ibis,* 1877, p. 250; *Scully, J. A. S. B.* lvi, pt. 2, p. 79.

Caprimulgus unwini, *Hume, Ibis,* 1871, p. 406; *id. S. F.* iii, p. 407; iv, p. 501; *id. Cat.* no. 111 bis; *Cock & Marsh. S. F.* i, p. 350; *Butler, S. F.* vii, p. 175; *Doig, S. F.* viii, p. 372; *Barnes, S. F.* ix, pp. 215, 453; *Biddulph, Ibis,* 1881, p. 48; 1882, p. 270; *Scully, Ibis,* 1881, p. 428; *Barnes, Birds Bom.* p. 90; *St. John, Ibis,* 1889, p. 156; *Oates in Hume's N. & E.* 2nd ed. iii, p. 47; *Hartert* (C. europæi *subsp.*), *Cat. B. M.* xvi, p. 528.

Coloration. Male. Upper surface greyish brown, paler and greyer in Eastern specimens; long black spots in the middle of the crown and shaft-stripes on the back and rump; some elongate black spots with buff or whitish borders on the scapulars and buffy-white patches on the wing-coverts; a few buff streaks on the sides of the neck; first three quills each with a large rounded white spot beyond the middle; tail-feathers with ill-marked blackish cross-bars, the two outer pairs with white ends; a large white patch on the throat; chin, throat, and breast greyish brown mottled; lower breast, abdomen, and under tail-coverts buff with dark bars, which become more distant posteriorly and sometimes disappear on the under tail-coverts.

The *female* wants the white spots on the outer rectrices, and those on the quills are buff or wanting.

Bill and irides black; legs reddish brown.

Length about 10; tail 5; wing 7; tarsus, about three-fourths feathered in front, ·7.

Distribution. A migratory bird, passing the summer and breeding in temperate parts of Europe and Asia, and wintering in Africa and South-western Asia. In winter this Nightjar visits the Punjab, Sind, and occasionally part of the N.W. Provinces, there being an immature specimen in the Hume collection from Etawah; in summer it breeds in Kashmir, Gilgit, Afghanistan, Persia, &c.

The Eastern form of this Nightjar, *C. unwini*, which occurs in India, is slightly paler and greyer and a little smaller than the ordinary European bird, whilst the Western European variety found in England is darker. If, as usually happens, the extreme forms are compared, there is a considerable difference, but many Eastern European skins are nearly as pale as *C. unwini*.

Habits, &c. Those of the genus. The eggs, usually two in number, are laid in May or June, and have been taken in the former month by Colonel Marshall at Murree. They are glossy, white, greyish white, or buff, blotched or marbled with pale purplish grey, spotted on the surface with pale sepia-brown, and they measure about 1·22 by ·85. They are laid in a small hollow on the bare ground. The note of this species is a whirring sound.

1093. **Caprimulgus macrurus.** *Horsfield's Nightjar.*

Caprimulgus macrourus, *Horsf. Trans. Linn. Soc.* xiii, p. 142 (1821); *Blyth, Cat.* p. 83; *Horsf. & M. Cat.* i, p. 112; *Jerdon, B. I.* i, p. 195; *Blyth & Wald. Birds Burm.* p. 83; *Hume & Dav. S. F.* vi, pp. 58, 498; *Cripps, S. F.* vii, p. 258; *Bingham, S. F.* ix, p. 150.

Caprimulgus macrurus, *Blyth, J. A. S. B.* xiv, p. 204; *Hume, S. F.* iii, p. 46; xi, p. 39; *id. Cat.* no. 110; *Anders. Yunnan Exped., Aves*, p. 588; *Oates, B. B.* ii, p. 20; *id. in Hume's N. & E.* 2nd ed. iii, p. 45; *Hartert, Cat. B. M.* xvi, p. 537.

Caprimulgus albonotatus, *Tickell, J. A. S. B.* ii, p. 580 (1833); *Blyth, Cat.* p. 83; *Jerdon, B. I.* i, p. 194; *Beavan, Ibis*, 1865, p. 406; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 266, xlv, pt. 2, p. 68; *Bulger, Ibis*, 1869, p. 155; *Wald. in Blyth's Birds Burm.* p. 83; *Hume, S. F.* iii, p. 45; *id. Cat.* no. 109; *Ball, S. F.* vii, p. 203; *Cripps, ibid.* p. 257; *Reid, S. F.* x, p. 19; *Oates, B. B.* ii, p. 19; *id. in Hume's N. & E.* 2nd ed. iii, p. 43; *C. H. T. Marshall, Ibis*, 1884, p. 409; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 589; *Hartert* (*subsp.* C. macruri), *Cat. B. M.* xvi, p. 537.

Caprimulgus atripennis, *Jerdon, Ill. Ind. Orn.* pl. 24 (1847); *id. B. I.* i, p. 196; *Holdsworth, P. Z. S.* 1872, p. 421; *Legge, Birds Ceyl.* p. 340; *Ball, S. F.* vii, p. 203; *Hume, Cat.* no. 111; *Butler, S. F.* ix, p. 380; *Davison, S. F.* x, p. 349; *Macgregor, ibid.* p. 436; *Barnes, Birds Bom.* p. 90; *id. Jour. Bom. N. H. Soc.* iv, p. 7, pl. fig. 111 (egg); *Oates in Hume's N. & E.* 2nd ed. iii, p. 47; *Hartert, Cat. B. M.* xvi, p. 542.

Caprimulgus mahrattensis, *apud Blyth, J. A. S. B.* xiv, p. 206; *id. Cat.* p. 83; *nec Sykes.*

? Caprimulgus sp., *Scully, S. F.* viii, p. 236.

The Large Bengal Nightjar, The Malay Nightjar, The Ghát Nightjar, Jerdon; *Khallpecha*, B. (Maunbhoom).

Coloration. Male. General colour above brown or brownish buff, varying much in depth of tint, the feathers very finely mottled; crown paler and generally greyer than back and marked with elongate black spots in the middle, not at the sides; a few black shaft-stripes on the back; a rufous tinge round the neck, but no distinct collar; scapulars with large velvety-black spots and some broad buff edges; wing-coverts spotted and stippled black and buff; black cross-bars on the tail indistinct; first four primaries with a white spot beyond the middle; outer two pairs of tail-feathers with white tips $1\frac{1}{2}$–2 inches long; a large white spot on the throat, the white feathers tipped buff and black, sides of head more or less rufous; a whitish moustachial stripe; chin, throat, and breast mottled brown, darker or paler, with a few broader buff edges to the feathers; abdomen and lower tail-coverts buff, barred throughout, but the bars rather wider apart posteriorly.

Female with the spots on the primaries and outer tail-feathers smaller and tinged with buff or rufous.

Bill pinkish brown; gape flesh-colour; iris dark brown; feet brown (*Oates*).

Dimensions varying: in the large Northern form (*C. albonotatus*), length about 13 inches, tail 6·5–7, wing 8–9, tarsus ·75; in the small Ceylonese race (*C. atripennis*), length 11, tail 5·5, wing 7, tarsus ·7. The tarsus is feathered throughout.

Somewhat to my surprise I find the South Indian and Ceylon *C. atripennis* identical with typical *C. macrurus* from Java (the original locality). It is a small bird of very dark colour, the primaries without any rufous markings in adult males. The large pale *C. albonotatus* of Northern India, with a buff-coloured, finely and very neatly stippled crown, the breast scarcely darker than the abdomen, and imperfect rufous bars at the base of all primaries, is, at first sight, a very different bird; but, as Hume has pointed out, every intermediate gradation may be found in the Himalayas, Assam, and Burma. These intermediate forms have been described by Jerdon and other Indian ornithologists as *C. macrurus*. Such intermediate forms are rare in Peninsular India, though there is considerable variation: thus there is a Nilgiri skin in the Hume collection the size of *C. atripennis*, but with the coloration of *C. albonotatus*. I therefore look upon this as one of the cases in which a large pale form inhabiting Northern India passes into a small dark variety to the southward on both sides of the Bay of Bengal.

Distribution. The large pale form (*C. albonotatus*) is found throughout the Himalayas at low elevations, in the North-west Provinces, Bengal, Chutia Nágpur, and Raipur, and in Burma. Intermediate forms between the large pale *C. albonotatus* and the small dark *C. macrurus* occur from the Eastern Himalayas to Tenasserim, Siam, and China. Typical *C. macrurus* ranges through the Malay Peninsula and Archipelago to Queensland and New Guinea, and also (as *C. atripennis*) inhabits Ceylon and Southern India as far north as the Godávari to the eastward and Belgaum to the west.

Habits, &c. All the varieties are chiefly forest birds, though occurring in Northern India in wooded parts of cultivated country. The call of this species is compared by several observers to the sound made by striking a plank with a hammer; a low chirp is also uttered during flight. The breeding-season is from March to May, and two eggs are laid, varying in tint from pale salmon or buff to lilac-grey, with pale purplish blotches and a few brown spots. They measure 1·08–1·3 by ·85–·95.

1094. **Caprimulgus andamanicus.** *The Andaman Nightjar.*

Caprimulgus andamanicus, *Hume, S. F.* i, p. 470; ii, pp. 162, 493; *id. Cat.* no. 110 bis; *Oates in Hume's N. & E.* 2nd ed. iii, p. 46; *Hartert, Cat. B. M.* xvi, p. 543.
Caprimulgus macrurus, *apud Walden, Ibis*, 1874, p. 131; *nec Horsf.*

Coloration very similar to that of *C. macrurus*, but the black spots on the crown are broader, more numerous, and not confined to the middle; the mottling of the feathers throughout is coarser, the buff edges of the scapulars narrower and less conspicuous. The upper plumage in general much resembles that of *C. indicus*. The white spots on the primaries are small and often rufous on the edges, and the white tips to the outer tail-feathers are shorter than in *C. macrurus*. In the female there are no larger rufous patches on the primaries, only narrow rufous bands and spots.

Length about 11; wing 7; tail 5·2; tarsus, feathered throughout, ·6.

Distribution. The Andaman Islands.

Habits, &c. So far as known, those of the genus. One of Mr. Davison's men obtained the eggs, two in number, on April 12th; they were very regular ovals, a delicate salmon-pink, "mottled, streaked, and ornamented with zigzag and hieroglyphic lines of a darker and somewhat purplish pink. They measure 1·07 and 1·13 in length and ·85 in width."

1095. **Caprimulgus indicus.** *The Jungle Nightjar.*

Caprimulgus indicus, *Latham, Ind. Orn.* ii, p. 588 (1790); *Gray in Hardw. Ill. Ind. Zool.* i, p. 34; *Blyth, J. A. S. B.* xiv, p. 208; *Jerdon, Ill. Ind. Orn.* pl. 24; *Blyth, Cat.* p. 82; *Horsf. & M. Cat.* i, p. 113; *Jerdon, B. I.* i, p. 192; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 19; *Butler, S. F.* iii, p. 454; v, pp. 218, 227; ix, p. 380; *Blyth, Birds Burm.* p. 83; *Morgan, Ibis*, 1875, p. 313; *Fairbank. S. F.* iv, p. 254; *Davidson & Wend. S. F.* vii, p. 77; *Ball, ibid.* p. 202; *Hume, Cat.* no. 107; *Vidal, S. F.* ix, p. 48; *Davidson, S. F.* x, p. 294; *C. H. T. Marshall, Ibis*, 1884, p. 409; *Barnes, Birds Bom.* p. 89; *id. Jour. Bom. N. H. Soc.* i, p. 61; iv, p. 7, pl. fig. 107; *Oates in Hume's N. & E.* 2nd ed. iii, p. 40.
Caprimulgus cinerascens, *Vieill. Tabl. Enc. Méth.* p. 545 (1823); *id. Nouv. Dict. d'Hist. Nat.* x, p. 283.
Caprimulgus jotaka, *Temm. & Schleg. Faun. Jap., Aves*, p. 37, pl. 12 (1847); *Wald. in Blyth's Birds Burm.* p. 83; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 153; xlv, pt. 2, p. 68; *Hume & Dav. S. F.* vi, p. 56; *Hume, Cat.* no. 107 bis; *id. S. F.* xi, p. 38; *Scully, S. F.* viii, p. 236; *Oates, B. B.* ii, p. 21; *Hartert, Cat. B. M.* xvi, p. 552.
Caprimulgus kelaarti, *Blyth, J. A. S. B.* xx, p. 175 (1851); *Jerdon, B. I.* i, p. 193; *Holdsworth, P. Z. S.* 1872, p. 421; *Morgan, Ibis*, 1875, p. 314; *Hume & Bourdillon, S. F.* iv, p. 381; *Hume, S. F.* vii, p. 203; *id. Cat.* no. 108; *Legge, Birds Ceyl.* p. 337; *Butler*,

S. F. ix, p. 380; *Davison, S. F.* x, p. 348; *Terry, ibid.* p. 470; *Oates in Hume's N. & E.* 2nd ed. iii, p. 41; *Hartert* (C. jotakæ *subsp.*), *Cat. B. M.* xvi, p. 555.

The Jungle Nightjar, The Neilgherry Nightjar, Jerdon.

Coloration. Male. General colour above dark brown, more spotted and blotched with black than other Indian species; crown, nape, and back with black spots and streaks throughout; a partial collar of buff spots, sometimes obsolete; the black patches on the scapulars generally distinct, but the buff edgings broken up; rounded, fulvous or whitish spots on the wing-coverts; black cross-bands on tail generally well-marked; first four primaries with a white spot, that on first primary very small; all the tail-feathers except the middle pair with a subterminal white band, the extreme tip dusky or black; a large white spot forming a band across the throat, and a buff moustachial stripe; chin to breast very dark, with a few buff or whitish spots; abdomen and lower tail-coverts buff, banded with darker brown, closely in front, more distantly behind.

Female. No white tips to tail-feathers; spots on the primaries small and rufous; throat-band buff.

Bill vinous brown, paler at the gape, the tip black; iris deep brown; legs and feet vinous brown.

Dimensions variable: in a large Assamese bird (*C. jotaka*), length 12·5, tail 5·6, wing 8·5, tarsus ·65; in small Ceylon specimens (*C. kelaarti*), length about 10·5, tail 5·25, wing 7·25, tarsus ·6. Tarsus feathered throughout.

Hume and others have shown that although typical *C. kelaarti* from Ceylon is greyer and smaller than ordinary Indian specimens (*C. indicus*), it is impossible to distinguish them. Himalayan and Assamese specimens are larger still, and Japanese typical *C. jotaka* largest of all, but there is a complete gradation, and all appear to belong to one species. According to Hume there is a difference in the call between *C. jotaka* and *C. indicus* (*C. kelaarti*); but it is difficult to find any distinctive character in the birds.

Distribution. From the Amur and Japan to Cochin China, Malacca, Java, Borneo, and New Guinea; and locally throughout India and Ceylon, this Nightjar being found in the lower Himalayas, the Punjab, Mount Abu, the forest tracts of the Indian Peninsula, and especially the hills of Southern India and Ceylon, and scattered sparingly throughout Burma.

Habits, &c. In many places this bird is said to be migratory. It is especially a forest form, appearing at the edge of forest in the evening, and uttering its call in the twilight. The breeding-season in India appears to be generally from March to May, but eggs have been taken at Raipur in August—much like those of other Nightjars, salmon-coloured to creamy-white with pale purplish and darker brown markings, and they measure about 1·15 by ·86.

Genus **LYNCORNIS**, Gould, 1835.

This genus is distinguished from *Caprimulgus* by the want of rictal bristles and the presence of ear-tufts or aigrettes, consisting of a few elongate feathers just above and behind the ear-coverts. Sexes alike. About six species are known, ranging from Southern India to New Guinea, but only one occurs within our area.

1096. **Lyncornis cerviniceps.** *The Great Eared Nightjar.*

Lyncornis cerviniceps, *Gould, Icon. Av.* pt. ii, pl. 14 (1838); *Blyth, J. A. S. B.* xiv, p. 209; *Jerdon, Ibis,* 1871, p. 356; *Blyth & Wald. Birds Burm.* p. 82; *Hume, S. F.* ii, pp. 162, 469; xi, p. 40; *id. Cat.* no. 114 bis; *Hume & Inglis, S. F.* v, p. 17; *Davison, ibid.* p. 454; *Wardl. Ramsay, Ibis,* 1877, p. 459; *Hume & Dav. S. F.* vi, p. 60; *Bingham, S. F.* ix, p. 151; *Oates, B. B.* ii, p. 22; *id. in Hume's N. & E.* 2nd ed. iii, p. 52; *Hartert, Cat. B. M.* xvi, p. 604.

Eurostopodus cerviniceps, *Blyth, Cat.* p. 82.

Lyncornis bourdilloni, *Hume, S. F.* iii, p. 302; *id. Cat.* no. 114 ter; *Hume & Bourd. S. F.* iv, p. 382.

Twun-dweng-ngat, Arakan; *Din-koo-nah*, Assam.

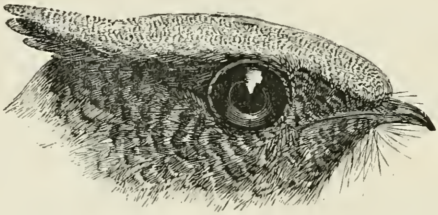

Fig. 55.—Head of *L. cerviniceps*, $\frac{2}{3}$.

Coloration. General colour above rich brown, the surface beautifully mottled; crown and nape buff, finely vermiculated with black, and with a few black oval spots in the middle; sides of head and chin black, the feathers with rufous edges; ear-tufts black, tipped the colour of the crown; back and rump buff, mixed with black and chestnut; scapulars buff and black mixed down the middle, with a band of black and chestnut in larger blotches on each side; wing-coverts black and chestnut mixed; quills black, with broken bands of rufous and black above, buff and black below; tail with alternating bars of buff and grey, each mottled with black; a large white spot on the throat; fore-neck, like chin, breast, and abdomen, buff, with black bars.

Bill light horn-colour; iris dark brown; legs and feet brownish fleshy.

Length about 16; tail 8; wing 12; tarsus 0·75.

Distribution. Throughout Burma in evergreen forests near hills, extending south into the northern part of the Malay Peninsula, and north to Manipur, Upper Assam, and Cachar, where this bird is common in August and September only. A specimen is said by Jerdon to have been obtained in the Teesta Valley, Sikhim, and a large Nightjar, probably this species, has been noticed in the Andaman Islands. The only other locality is the Travancore hills, where specimens were shot by Mr. Bourdillon. The first obtained was regarded by Mr. Hume as distinct on account of its small size, but other skins show that there is no constant difference of importance.

Habits, &c. Very similar to those of *Caprimulgus*, except that *L. cerviniceps* has been found by Major Bingham roosting in caves in the daytime. Hume had suggested the probability of this being the case. This bird appears soon after sundown, according to Blyth and Davison, flying at a considerable height at first, then nearer the ground, and capturing the insects on which it feeds. The note is a characteristic full clear trisyllabic whistle, uttered on the wing or from a perch. A single egg, found by Davison on January 10th, was a long cylindrical oval, cream-coloured, with irregular blotches of pale lilac-grey, looking as if they were beneath the surface (a common character of Caprimulgine eggs). It measured 1·65 by 1·18. It was laid on the ground in a slight depression, without any nest.

Suborder *PODARGI.*

Athough these birds are distinguished from the *Caprimulgi* by having a desmognathous palate, no basipterygoid processes nor oil-gland, by the possession of a powder-down patch on each side of the rump, and by widely different nidification, the Frogmouths, as they are called, are generally regarded as much more nearly allied to Nightjars than Swifts are. The sternum has a low keel and a pair of deep incisions on each side of the posterior border. The stomach is muscular. The nest is either built of twigs, or else is a pad or cup of down, leaves, moss, &c. placed on a branch, and the eggs are one or two in number, white and glossless. Young hatched helpless and downy. Habits nocturnal and insectivorous.

A single family.

Family PODARGIDÆ.

Bill large, depressed, extremely broad, much more solid than in *Caprimulgidæ*, curved, and the tip hooked. Base of the bill overhung by large numbers of bristly feathers, concealing the nostrils, which are narrow slits protected by membrane.

This family inhabits the Oriental and Australian regions; one genus is Indian.

Genus **BATRACHOSTOMUS**, Gould, 1838.

Wings rounded, short, 4th and 5th quills longest. Tail long, graduated. No rictal bristles, but there are conspicuous bristly feathers at the base of the bill; tufts of the same in front of the eyes, and ear-tufts, with bristles at the ends of the feathers. Tarsus short; feet small, middle toe elongate. Sexes in most species very different in plumage.

This genus, which is nearly allied to the Australian *Podargus*, inhabits the greater part of the Oriental region, and comprises about nine species, of which three occur within Indian limits.

Key to the Species.

a. General colour speckled greyish brown.
  a'. Crown with irregular black blotches; wing 5·3 .... *B. hodgsoni* ♂, p. 194.
  b'. Crown without distinct black marks; wing 4·5 .... *B. affinis* ♂, p. 196.
  c'. Crown with small black spots, each terminating behind in a whitish speck .... *B. moniliger* ♂, p. 196.
b. General colour chestnut.
  d'. Scapulars with large white black-bordered patches; no white on wing-coverts.
    a''. Wing 5·3; colour bright .... *B. hodgsoni* ♀, p. 194.
    b''. Wing 4·5; colour dull .... *B. affinis* ♀, p. 196.
  e'. Scapulars ending in small black and buff spots; white spots on wing-coverts .... *B. moniliger* ♀, p. 196.

1097. **Batrachostomus hodgsoni.** *Hodgson's Frogmouth.*

Batrachostomus affinis, *apud Blyth, J. A. S. B.* xviii, p. 806 (*nec* xvi, p. 1180); *Walden, Ibis,* 1876, p. 355; *Tweeddale, Ibis,* 1877, p. 388, partim; *id. P. Z. S.* 1877, p. 426, pt.; *Oates, B. B.* ii, p. 15, pt.; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 382.

Otothrix hodgsoni, *G. R. Gray, P. Z. S.* 1859, p. 101, pl. clii; *Jerdon, B. I.* i, p. 190; *id. Ibis,* 1871, p. 356; *Hume, S. F.* iv, p. 377.

Batrachostomus castaneus, *Hume, S. F.* ii, p. 349; vii, p. 148; *Blanf. Ibis,* 1877, p. 251; *Tweeddale, ibid.* p. 388; *Hume, Ibis,* 1878, p. 120.

Batrachostomus hodgsoni, *Walden in Blyth's Birds Burm.* p. 83; *Hume, S. F.* vi, p. 53; xi, p. 34; *id. Cat.* no. 106; *Oates in Hume's N. & E.* 2nd ed. iii, p. 39; *Hartert, Cat. B. M.* xvi, p. 642.

Batrachostomus javensis, *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 13: *Hume, S. F.* vii, p. 147.

Sūmbong, Nága, Manipur.

Coloration. Male. Upper surface brown, an intimate mixture of black and rufous or buff; supercilia whitish; crown and nape with irregular black blotches; a few smaller black spots on the back; a whitish collar produced by white feathers with black cross-bands round the hind-neck; much white on the scapulars and whitish buff on the tertiaries; quills brown, the outer webs and tips mottled and spotted with rufous-white; tail banded, paler and darker, the cross-bands with imperfect blackish-brown edges; lower surface paler than upper, of rufous, white, and black mixed, white prevailing on the abdomen; a more or less distinct white band across the lower throat.

Female. Rich chestnut throughout; supercilia white; chin, vent, and lower tail-coverts whitish; a nuchal collar of white feathers banded with dark brown; some of the scapulars, a band of feathers across the throat, and a second across the breast white with black borders; tail with darker mottled cross-bands.

Young very imperfectly known, probably each resembles an adult of the same sex.

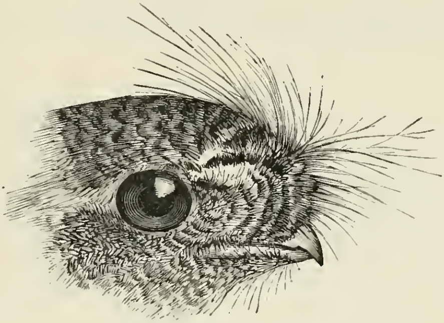

Fig. 56.—Head of *B. hodgsoni*, ♂. $\frac{1}{1}$.

Bill light madder; irides marbled buff; legs light madder tinged with violet (*W. Ramsay*).

Length about 10·5; tail 6; wing 5·3; tarsus ·65; width of bill at gape 1·2.

Distribution. Sikhim, at low elevations; Nága hills; Manipur; Toungngoo in Burma; Karennee. Probably throughout the country from Sikhim to Northern Tenasserim, but apparently very rare.

Habits, &c. Scarcely known at all, but doubtless similar to those of other species. The stomach of a female brought to Mr. Hume in Manipur contained beetles. The breeding-season appears to be from April to June; the nests are either circular pads or deep cups composed of moss, roots, or leaves and twigs, lined with grass or down, placed on a branch or the stem of a tree. The eggs, one or two in number, are glossless white, and measure about 1·09 by ·64.

1098. **Batrachostomus affinis.** *Blyth's Frogmouth.*

Batrachostomus affinis, *Blyth, J. A. S. B.* xvi, p. 1180 (1847); *Tweeddale, P. Z. S.* 1877, p. 426 (pt.), pl. xlv; *id. Ibis,* 1877, p. 338; *Hume, Ibis,* 1878, p. 120; *id. Cat.* no. 105 ter; *Bingham, S. F.* ix, p. 149; *Oates, B. B.* ii, p. 15, pt.; *Hartert, Cat. B. M.* xvi, p. 643.
Podargus affinis, *Blyth, Cat.* p. 81.

Coloration of both sexes very similar to that of *B. hodgsoni,* but the male of the present species has on the crown no black spots, but usually some minute white or buff specks, and there is a reddish-brown collar above the whitish one, which is more distinct than in *B. hodgsoni.* The breast too is more rufous. The female is darker and duller chestnut. The size is smaller: length about 8·5; tail 4·4; wing 4·5; tarsus ·55; breadth of gape 1·2.

Distribution. The Malay Peninsula, Borneo, and probably Sumatra. A single specimen, apparently belonging to this species, was obtained by Major Bingham in the Meplay valley, south-east of Moulmein in Tenasserim.

1099. **Batrachostomus moniliger.** *The Ceylonese Frogmouth.*

Podargus javanicus, *apud Blyth, J. A. S. B.* xi, p. 798.
Podargus javanensis, *apud Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 143; *Blyth, J. A. S. B.* xiv, p. 309 (*nec Horsfield*).
Batrachostomus moniliger, *Layard, Blyth, J. A. S. B.* xviii, p. 806; *Layard, A. M. N. H.* (2) xii, p. 165; *Jerdon, B. I.* i, p. 189; *Holdsw. P. Z. S.* 1872, p. 420; *Legge, Ibis,* 1874, p. 12; *id. S. F.* iii, p. 198; *Hume & Bourd. S. F.* iv, p. 376; *Tweeddale, P. Z. S.* 1877, p. 439, pls. xlviii, xlix; *Hume, Cat.* no. 105; *Legge, Birds Ceyl.* p. 331; *Oates in Hume's N. & E.* 2nd ed. iii, p. 38; *Hartert, Cat. B. M.* xvi, p. 644.
Batrachostomus punctatus, *Hume, S. F.* i, p. 432; ii, p. 355; iii, p. 199; iv, p. 377; *id. Cat.* no. 105 bis; *Blanford, Ibis,* 1877, p. 252; *Tweeddale, ibid.* p. 391; *Hume, Ibis,* 1878, p. 122.

The Wynaad Frogmouth, Jerdon.

Coloration. Male. General tint mottled grey, with a more or less rufous tinge; supercilia whitish; black spots, each terminated by a buff speck, on the crown and back; a white collar on the hind-neck; scapulars and tertiaries whitish, quills dark brown, with buff or rufous spots on the outer webs; tail with pale and dark cross-bands; lower parts much like the upper, with an imperfect white gorget, and much white on the abdomen.

Female. Dull rufous, like *B. affinis* ♀; supercilia pale; an indistinct white collar on the hind-neck; scapulars with very small subterminal black spots tipped with minute white specks; some white spots at the ends of the wing-coverts; beneath, the abdomen is much paler; there is a band across the throat of feathers white at the end with a somewhat irregular subterminal black bar; similar feathers are scattered over the abdomen. The upper parts are usually more or less mottled with blackish, and there are indications of cross-bars to the tail-feathers. Young birds are greatly mottled throughout.

Bill olive-brown, the lower mandible paler; irides yellow; legs and feet fleshy grey (*Legge*). Tarsus feathered for the greater part of its length.

Length about 9; tail 4·5; wing 4·75; tarsus ·6; width of bill at gape 1·3. The type of *B. punctatus* was exceptionally small, tail 4, wing 4·3.

Distribution. Throughout Ceylon, in Travancore, and doubtless in the Wynaad.

Habits, &c. A shy nocturnal bird, living in forest, and very seldom seen. Legge, in Ceylon, once found one sleeping perched across a bamboo in the daytime. When thus perched its bill was turned upwards and its eyes closed. Both Legge and Bourdillon noticed a loud chuckling cry, which they attributed to this bird, and both think this species less rare than it appears to be. Bourdillon obtained a young one and the nest in Travancore on February 24th; the nest was a pad, 2½ inches broad, of dead leaves, fragments of bark, dry wood, and lichen interwoven with vegetable down, in the fork of a sapling about 15 feet from the ground. Fragments of the egg showed that it was pure white, smooth, and glossless.

Order VII. TROGONES.

The Trogons differ from all other birds in the structure of the feet. The first and second digits are turned backwards, and are supplied by the *flexor longus hallucis*, and the third and fourth digits are directed forward and connected with the *flexor perforans digitorum.* The two flexor tendons are united by a vinculum (fig. 58).

Palate schizognathous (Forbes, P. Z. S. 1881, p. 836). Basipterygoid processes are present. Sternum with four notches on the posterior border; manubrium long, slightly forked; coracoids in contact. Oil-gland nude. Cæca present. Spinal feather-tract well-defined from nape to oil-gland, not forked. Aftershaft of contour-feathers large. No median wing-coverts. Ambiens muscle wanting. Plumage of the young nearly resembling that of the female.

A single family.

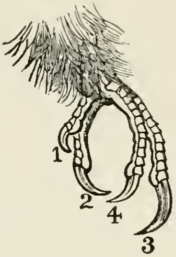

Fig. 57.—Right foot of *Harpactes erythrocephalus*, 1/1.

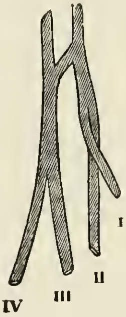

Fig. 58.—Deep plantar tendons of *Trogon puella* (Garrod, P. Z. S. 1875, p. 345).

Family TROGONIDÆ.

Bill short, strong, wide, the tip of the culmen hooked and toothed; nostrils and base of bill covered with well-developed bristles. Feet small, tarsi short. Tail-feathers 12; primaries 10. Plumage soft and dense; skin very thin.

This family is found in the Oriental and Ethiopian regions and in Tropical America. Only one genus, which is widely distributed in the Oriental region, is found within our limits.

Genus **HARPACTES**, Swainson, 1837.

Tail long, with broad feathers, squarely truncated in adults, pointed in young, the outer three pairs much graduated. Wing rounded, the inner primaries and secondaries very short. Tarsus half-feathered. Face naked at sides.

Key to the Species.

a. Head and neck black; abdomen crimson.	
a′. A white band across breast	*H. fasciatus* ♂, p. 199.
b′. No white band	*H. duvauceli* ♂, p. 201.
b. Head red; abdomen crimson	*H. erythrocephalus* ♂, p. 200.
c. Head yellowish olive; abdomen orange.	*H. orescius* ♂, p. 202.
d. Head brown or brownish olive.	
c′. Abdomen brownish buff	*H. fasciatus* ♀, p. 199.
d′. Abdomen red or pink.	
a″. Crown concolorous with back; wing 5·7	*H. erythrocephalus* ♀, p. 200.
b″. Crown darker than back; wing 4·2	*H. duvauceli* ♀, p. 201.
e′. Abdomen yellow	*H. orescius* ♀, p. 202.

The habits of all the species are similar. All inhabit forests, and perch on trees, frequently on a large horizontal branch, on which the Trogon remains motionless and, with its gaudy breast concealed, but little likely to be seen. It flies out from time to time in pursuit of insects, chiefly beetles, moths, or cicadas, but it occasionally feeds on insects on the ground. Indian Trogons have not been observed to eat fruit, as some of the gorgeous American forms do. They are generally silent birds, but have peculiar soft calls, and also utter a mewing sound. Holes or hollows generally in rotten stumps or branches of trees are excavated for nests and are not lined; the eggs are creamy white and glossy, and generally broadly oval in shape.

1100. **Harpactes fasciatus.** *The Malabar Trogon.*

Trogon fasciatus, *Pennant, Ind. Zool.* pl. iv (1769).
Trogon duvaucelii, *Tickell, J. A. S. B.* ii, p. 580 (*nec Temm.*).
Trogon malabaricus, *Gould, P. Z. S.* 1834, p. 26.
Harpactes malabaricus, *Swains. Class. Birds*, ii, p. 337; *Jerdon, Madr. Jour. L. S.* xi, p. 232.
Harpactes fasciatus, *Blyth, Cat.* p. 80; *Layard, A. M. N. H.* (2) xii, p. 171; *Horsf. & M. Cat.* ii, p. 714; *Jerdon, B. I.* i, p. 201; *Holdsw. P. Z. S.* 1872, p. 422; *Hume, S. F.* i, p. 432; vii, p. 507; *id. Cat.* no. 115; *Ball, S. F.* iv, p. 231; v, p. 413; vii, p. 203; *Fairbank, S. F.* iv, p. 254; v, p. 393; *Bourdillon, S. F.* iv, p. 382; vii, p. 172; *Thompson, S. F.* iv, p. 498; *Legge, Birds Ceyl.* p. 269; *Butler, S. F.* ix, p. 381; *Davison, S. F.* x, p. 349; *Barnes, Birds Bom.* p. 93; *Oates in Hume's N. & E.* 2nd ed. ii, p. 340; *Ogilvie Grant, Cat. B. M.* xvii, p. 485.

Kufni churi, H.; *Karna*, Mahr.; *Kakarne hakki*, Can.; *Nawa nila kurulla*, *Ranwan kondea*, *Ginni kurulla*, Cing.

Coloration. Male. Head and neck all round with upper breast dull black or blackish grey; back, scapulars, and coverts along forearm yellowish brown, slightly paler on the rump and upper tail-coverts; wings black, the coverts away from the forearm, except the greater primary-coverts, tertiaries, and outer webs of secondaries, finely and closely barred with slightly undulating white lines; the quills white at the base, and the outer webs of all primaries, except the first and a few of the last, with a white border; middle tail-feathers chestnut with a black tip, the remainder black, generally some chestnut on second and third pairs from middle, three exterior pairs with long white tips; a white band between the black upper breast and the rest of the lower parts, which are pale crimson, the lower tail-coverts paler still.

Female. Head, neck, and upper breast olive-brown, no white gorget; rest of lower parts brownish buff; bars on wing-coverts, tertiaries, and secondaries light brown, instead of white; tail-feathers as in immature males.

Young males have the lower parts mixed with buff and white, the bars on the wings are fulvous, and the head and neck brownish. The 2nd and 3rd pairs of tail-feathers from the middle have more chestnut than in adults, this colour extending along the shafts and both borders.

Bill deep blue; orbital skin smalt-blue; irides dark brown; feet light lavender-blue (*Jerdon*).

Length 12; tail 6·75; wing 5; tarsus ·6; bill from gape 1: females rather less. Ceylonese birds are smaller than Indian.

Distribution. Local and rare throughout the forest country east of about 80° long., extending from Hazáribágh and Midnapur to south of the Godávari; more common in the forests near the Malabar coast, from Western Khandesh (whence both Lord Tweeddale and Mr. Hume obtained specimens) to Cape Comorin. This species does not occur in any part of the peninsula beyond the tracts mentioned, but is found generally distributed in Ceylon.

Habits, &c. Those of the genus. The eggs have been taken in March, April, and May, and are usually three in number, ivory-white, and about 1·08 by ·95 in dimensions.

1101. **Harpactes erythrocephalus.** *The Red-headed Trogon.*

Trogon erythrocephalus, *Gould, P. Z. S.* 1834, p. 25.

Harpactes erythrocephalus, *Swains. Class. Birds*, ii, p. 337; *Hume, Cat.* no. 116; *id. S. F.* xi, p. 41; *Oates, S. F.* viii, p. 164; *Bingham, S. F.* ix, p. 152; *Hume & Inglis, ibid.* p. 246; *Oates, B. B.* ii, p. 99; *id. in Hume's N. & E.* 2nd ed. ii, p. 339; *Ogilvie Grant, Cat. B. M.* xvii, p. 488.

Harpactes hodgsoni, *Gould, Mon. Trog.* ed. i. pl. 34 (1838); *Blyth, Cat.* p. 80; *Horsf. & M. Cat.* ii, p. 713; *Jerdon, B. I.* i, p. 202; *Blyth, Ibis*, 1866, p. 342; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 95; xliii, pt. 2, p. 177; *Hume & Oates, S. F.* iii, p. 47; *Blyth & Wald. Birds Burm.* p. 82; *Hume & Inglis, S. F.* v, p. 18; *Bingham, ibid.* p. 82; *Hume & Dav. S. F.* vi, p. 66.

Suda-sohagin ♂, *Cuchcuchia* ♀, Beng.; *Hamesha piyara* ♂ ("always beloved," not "always thirsty," as translated by Jerdon), H.; *Sakvor*, Lepcha; *Htat-ta-yu*, Burmese.

Coloration. Male. Head and neck all round, and upper breast, deep crimson; chin blackish; remainder of lower parts bright crimson behind an ill-marked white gorget; back, scapulars, and wing-coverts along forearm ferruginous-brown, brighter and more rufous on rump and upper tail-coverts; wings as in *H. fasciatus*; middle tail-feathers rich chestnut, black-tipped, the next two pairs black, with usually part of the outer web chestnut; outer three pairs black, with long white tips.

Female. Head and neck all round, upper breast, back, and scapulars orange-brown, rump more rufous; coverts and secondaries barred light brown and black; lower parts red as in the male. The young of both sexes have the lower parts from the breast white or buff, wholly or in part.

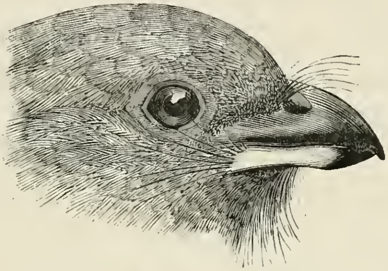

Fig. 59.—Head of *H. erythrocephalus*, ¹⁄₁.

Bill bluish, tips of both mandibles and culmen black; gape and orbital skin purplish blue; iris dull red; legs pinkish (*Oates*).

Length 13; tail 7·5; wing 5·8; tarsus ·6; bill from gape 1·1. Females rather less.

Distribution. Himalayas as far west as Eastern Nepal, up to about 5000 feet elevation, also throughout Assam and the Burmese countries to the Malay Peninsula, in forest.

Habits, &c. Like those of other species. The eggs, generally four in number and creamy white, are laid from March to July; they measure about 1·14 by ·95.

1102. **Harpactes duvauceli.** *The Red-rumped Trogon.*

Trogon duvaucelii, *Temm. Pl. Col.* pl. 291 (1824).
Harpactes rutilus, *Gray, Gen. B.* i, p. 71 (1845); *Blyth, Cat.* p. 80; *Horsf. & M. Cat.* ii, p. 712 (*nec Vieill.*).
Harpactes duvauceli, *Hume, S. F.* iii, p. 318; *id. Cat.* no. 115 bis; *Hume & Dav. S. F.* vi, pp. 63, 498; *Oates, B. B.* ii, p. 101; *Ogilvie Grant, Cat. B. M.* xvii, p. 491.

Coloration. Male. Whole head and neck jet-black; back, scapulars, and coverts along forearm orange-brown; rump and upper tail-coverts and lower plumage from throat crimson; wings as in *H. fasciatus*, but the white bars wider apart; middle tail-feathers bright chestnut tipped with black, the next two pairs black, the three outer pairs black with long white tips.

Female. Head above dark olive-brown; sides of head, chin, and throat rufous-brown; back lighter rufous-brown, becoming orange-brown tinged with red on the rump and upper tail-coverts; wing-coverts and secondaries barred with buff; upper breast yellow-brown, passing into pink on the abdomen. In young birds the lower parts are chiefly buff.

Tip and ridge of culmen and a narrow streak on each side horny black; gape and sides of bill cobalt-blue; irides dull brown; orbital region smalt-blue; legs and feet the same, varying in depth of hue (*Davison*).

Length about 10; tail 5; wing 4·2; tarsus ·4; bill from gape ·9. Females a very little smaller than males.

Distribution. Not uncommon in Southern Tenasserim, as far north as Tavoy, and throughout the Malay Peninsula to Sumatra and Borneo.

1103. **Harpactes orescius.** *The Yellow-breasted Trogon.*

Trogon oreskios, *Temm. Pl. Col.* pl. 181 (1823).
Harpactes oreskios, *Blyth, Cat.* p. 80; *Horsf. & M. Cat.* ii, p. 716; *Walden, P. Z. S.* 1866, p. 538; *Hume & Oates, S. F.* iii, p. 47; *Bingham, S. F.* v, pp. 50, 82; ix, p. 152; *Davison, S. F.* v, p. 454; *Hume & Dav. S. F.* vi, pp. 66, 498; *Hume, Cat.* no. 116 bis; *Oates, B. B.* ii, p. 100; *id. in Hume's N. & E.* 2nd ed. ii, p. 342; *Ogilvie Grant, Cat. B. M.* xvii, p. 494.
Orescius gouldi, *Cab. & Heine, Mus. Hein.* iv, pt. 1, p. 161 (1863); *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 561.
Harpactes orescius, *Blyth, Ibis,* 1865, p. 32; *Beavan, Ibis,* 1869, p. 407; *Blyth & Wald. Birds Burm.* p. 82; *Oates, S. F.* x, p. 186.

Coloration. Male. Crown, nape, and sides of head yellowish olive; hind-neck, chin, throat, and fore-neck more yellow, passing into rich orange on the breast, and this again into yellow-orange on the abdomen and lower tail-coverts; back, scapulars, rump, upper tail-coverts, and wing-coverts along the forearm chestnut; wings as in the other species, except that the white bars on the wing-coverts, secondaries, and tertiaries are broader, straighter, and much farther apart; tail as in *H. duvauceli.*

Female. Head, neck, and upper breast olive-brown, passing on back into rufous-brown; bars on wings buff; lower parts from breast deep yellow. In immature birds the abdomen is white or buff.

Bill purplish blue, the culmen and tip blackish; orbital skin bright smalt-blue; iris dark brown; legs plumbeous blue (*Oates*).

Length 12; tail 6·4; wing 5; tarsus ·55; bill from gape ·9.

Distribution. Arrakan, Pegu, and Tenasserim, Siam, Cochin China, the Malay Peninsula, Sumatra, Java, and Borneo. Not recorded from Upper Burma, nor from any country north of Arrakan.

Habits, &c. Those of the genus, but, according to Davison, this species keeps less exclusively to dense forest. The eggs have been taken by Bingham and Davison in February and March, and are two or three in number, glossy, pale *café-au-lait* in colour, and about 1·05 by ·83 in dimensions.

Order VIII. COCCYGES.

This order is distinguished from all other zygodactyle groups, except the Parrots, by possessing the ambiens muscle, a character to which a very high importance was attached by Garrod, and by the deep plantar tendons being arranged as in Gallinaceous birds, and only differing in arrangement from the Passerine plan by being connected by a vinculum; the *flexor longus hallucis* leads to the hallux alone, the *flexor perforans digitorum* serves the other three digits. The palate is desmognathous; basipterygoid processes are wanting.

Two families are included—the *Cuculidæ* and *Musophagidæ*; the latter, however, is entirely African, and the former alone requires notice here.

By Garrod, Newton, and other recent writers, the Coccyges have been regarded as having Galline affinities. The aberrant type *Opisthocomus* appears to be a link between *Gallinæ* and *Musophagidæ*.

Family CUCULIDÆ.

Feet zygodactyle, the first and fourth toes directed backward; cæca present; both carotids present; contour-feathers without any aftershaft; dorsal feather-tract divided between the shoulders, and enclosing a lanceolate naked space on the back; an oil-gland present, but nude. Young hatched naked, and not passing through a downy stage before acquiring feathers. Tail-feathers 10 in number (except in some American genera, which have only 8).

The members of this family have almost a world-wide range, but are most numerous in tropical countries. They vary greatly in nidification and breeding-habits.

The *Cuculidæ* have been variously divided. The Indian forms have by different writers been classed sometimes in two, sometimes in three subfamilies. On the whole the first arrangement appears preferable, as there is no doubt that the *Phœnicophainæ* and *Centropodinæ* are more closely allied to each other than either of them is to the true Cuckoos. I therefore class them thus:

a. Tarsus feathered anteriorly (only at the base in *Coccystes*); no accessory femoro-caudal muscle .... *Cuculinæ.*

b. Tarsus naked; accessory femoro-caudal present .... *Phœnicophainæ.*

Subfamily CUCULINÆ.

This comprises the true Cuckoos, almost all of which have parasitic breeding-habits. The most marked external characters are that the tarsus is more or less feathered in front (least in *Coccystes*, which, however, may be easily recognized by being crested) and that the wing is more or less pointed. The tail (except in *Coccystes*) scarcely exceeds or does not exceed the wing in length. The plumage is firm but not spiny.

Other characters of this subfamily are the absence of an accessory femoro-caudal muscle (Garrod, P. Z. S. 1874, p. 141), and the simple undivided band of feathers on each side of the naked pectoro-ventral tract (Beddard, P. Z. S. 1885, p. 174).

It is possible that *Coccystes* may prove, when the anatomy and pterylosis are examined, to belong to the *Phœnicophainæ*. It and *Eudynamis* are in some respects intermediate between the typical forms of the two subfamilies.

Key to the Genera.

a. No crest.
  a'. Secondaries in closed wing scarcely exceeding half length of primaries .... Cuculus, p. 204.
  b'. Secondaries two-thirds length of primaries or more.
    a''. Tail rounded and graduated.
      a^3. Larger: plumage hawk-like; tail with 3 or 4 black cross-bands .. Hierococcyx, p. 211.
      b^3. Smaller, not larger than a Thrush: tail without cross-bands or with far more than 4.
        a^4. Plumage without metallic colours.
          a^5. Young and adult differently coloured; bill compressed; tail-feathers the same length throughout .... Cacomantis, p. 216.
          b^5. Young and adult similar; bill stout, not compressed; tail-feathers narrower behind .... Penthoceryx, p. 219.
        b^4. Plumage partly metallic green or violet.... .... Chrysococcyx, p. 220.
    b''. Tail square or forked; plumage black......................... Surniculus, p. 223.
b. Head crested; tarsi almost naked .... Coccystes, p. 224.

Genus **CUCULUS**, Linn., 1766.

Wing long and pointed, third quill longest and exceeding the secondaries in the closed wing by almost half the length of the wing. The first primary is about two-thirds the length of the wing. Tail shorter than wing, graduated, the outer feathers falling short of the middle pair by one-fourth to one-third the length of the tail. Bill moderate. In adults the upper plumage is almost uniform dark ashy or brown, the chin and throat ashy, abdomen white barred with black; the wings barred on the inner webs. The young undergo two or three changes, one phase being chestnut above barred with dark brown.

The true Cuckoos have a wide range, being found in Europe, Asia, Africa, and Australia, and comprise about nine species, of which four inhabit the Indian area.

Key to the Species.

Wing 8 to 9 in., no subterminal black band on tail; edge of wing mixed white and brown.	*C. canorus*, p. 205.
Wing 6·5 to 7·8; edge of wing white	*C. saturatus*, p. 207.
Wing 5·7 to 6·1; edge of wing ashy	*C. poliocephalus*, p. 208.
Wing 7·5 to 8·5; a subterminal black band on tail	*C. micropterus*, p. 210.

Cuckoos are birds of swift flight and peculiar habits. All have resonant call-notes, distinctive of the particular species. The true Cuckoos are more or less migratory; they feed chiefly on caterpillars and soft insects, and, as is well known, do not pair, but indulge in promiscuous intercourse, and the females deposit their eggs in the nests of other birds *. The female Cuckoo sometimes, at all events, perhaps always, lays her egg on the ground and conveys it in her mouth to the nest selected. Some of the eggs already in the nest are often broken, whether intentionally or by accident is not quite clear, but it is certain that the young Cuckoo when hatched ejects from the nest the callow young of its foster-parents, and is fed by the latter until full-grown. When two Cuckoo's eggs are laid in the same nest, the stronger young Cuckoo turns out the weaker.

1104. **Cuculus canorus.** *The Cuckoo.*

Cuculus canorus, *Linn. Syst. Nat.* i, p. 168; *Blyth, Cat.* p. 71; *Horsf. & M. Cat.* ii, p. 702; *Jerdon, B. I.* i, p. 322; *id. Ibis*, 1872, p. 12; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 22; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 168; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 267; *McMaster, J. A. S. B.* xl, pt. 2, p. 209; *Cock & Marsh. S. F.* i, p. 351; *Adam, ibid.* p. 373; *Hume, S. F.* iv, p. 288; xi, p. 69; *id. Cat.* no. 199; *Butler, S. F.* vii, p. 181; *Ball, ibid.* p. 206; *Scully, S. F.* viii, p. 253; *id. Ibis*, 1881, p. 430; *Legge, Birds Ceyl.* p. 221; *Biddulph, Ibis*, 1881, p. 49; *Swinhoe, Ibis*, 1882, p. 103; *Oates, B. B.* ii, p. 103; *Barnes, Birds Bom.* p. 124; *St. John, Ibis*, 1889, p. 159; *Oates, ibid.* p. 355; *id. in Hume's N. & E.* 2nd ed. ii, p. 379; *Shelley, Cat. B. M.* xix, p. 245.

The European Cuckoo, Jerdon; *Phuphu*, H., Dehra Dún; *Kupwah*, Kumaun; *Kukku*, Lepcha; *Akku*, Bhot.

Coloration. Adult male. Whole upper plumage dark ashy, the rump and upper tail-coverts rather paler; wings browner, with a gloss; quills barred with white on the inner webs except near the tips; chin, throat, sides of the neck, and upper breast pale ashy; lower breast, abdomen, and flanks white, with narrow blackish cross-bars; under tail-coverts the same, but more sparingly barred; edge of wing mixed white and black; tail blackish brown, tipped with white, the inner webs notched with white, and some white spots along the shaft of each feather.

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* A remarkable instance of a Cuckoo (*C. canorus*) hatching her own egg and feeding her young is related in the 'Ibis' for 1889, p. 219.

The *adult female* only differs in having the upper breast, and sometimes the sides of the neck, rufous.

The young pass through two well-defined stages of plumage before arriving at maturity. In the first or nestling stage, the colour is dark brown above, indistinctly barred with rufous, each feather margined with white; a white nuchal spot is present from the earliest age; the lower plumage is broadly barred brownish black and white, black preponderating on the throat and upper breast. When the bird is fully fledged, the white edges to the feathers wear off to some extent, and the rufous bars are lost on all parts except the wings; the tail is very similar to that of the adult, but browner.

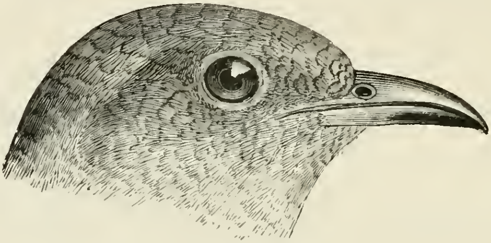

Fig. 60.—Head of *C. canorus*, $\frac{1}{1}$.

In the second stage the black bars on the lower plumage become narrower; the whole upper plumage, wings, and tail are barred with pale rufous, the white margins still remaining; the nuchal spot is retained nearly to the end of the second stage, and disappears only when the birds begins to acquire ashy patches on the upper plumage. The transition from one stage of plumage to the other is gradual, and every intermediate form occurs.

The chief distinctive character in the young of this species is the white nuchal spot, which is seldom wanting. In the nearly allied *C. saturatus* this spot very rarely if ever occurs; and in the small *C. poliocephalus* a white nape-patch is only present in one stage, the second, and is often accompanied by a white half-collar extending round the hind-neck.

The above changes are effected without any moult, by a change of colour in the feathers. The adult plumage is assumed in the spring of the year after birth, but apparently the birds do not moult till in their second autumn. The same is the case with the next two species.

Bill dusky horn, yellowish at the base and edges; gape orange-yellow; iris and legs yellow: the young have the iris brown, and the lower mandible pale green.

Length about 13; tail 6·7 to 7·3; wing 8 to 9, and occasionally longer; tarsus ·8; bill from gape 1·25.

Distribution. A migratory bird found at one season or another throughout the greater part of the Old World and even in Australia. The Cuckoo, in the months from July to April, may be found in almost any part of India, Ceylon, or Burma, but to the southward is of rare occurrence. It is common throughout the Himalayas and the hills of Afghanistan and Baluchistan in the breeding-season, May and June, but it has been found at the same period, April, May, and June, by several observers, by myself amongst others, in the forest country between Chutia Nagpur and the Godávari, so that it probably breeds there. Col. McMaster observed it at the same season near Saugor, Kamptee, and Chikalda, and Mr. Adam at Sámbhar. Captain Butler believes that it breeds on Mount Abu. Wardlaw Ramsay found this species common in Karennee in March, and Oates shot a very young bird in Pegu on August 8th, so it probably breeds in the Burmese hills.

Habits, &c. The food of the Cuckoo consists of caterpillars, grubs, worms, and soft-bodied insects. The flight is swift and singularly like that of a Hawk. The bisyllabic call, from which the bird derives its name in many languages, is only heard in the breeding-season, and is peculiar to the male bird. At times the first half of the call is uttered by itself, occasionally a treble note is produced, but both are exceptional.

The breeding-season, in India, is in May and June, and eggs of this bird have been found in the nests of Pipits (*Oreocorys sylvanus* and *Anthus similis*), Bush-Chats (*Pratincola caprata, P. maura, Oreicola ferrea*), and the Magpie-Robin (*Copsychus saularis*). The eggs vary greatly in colour, some are much pinker than others; the ground-colour varies from white to pink, spotted, streaked, and mottled with brownish or yellowish red and pale purple. The size is about ·97 by ·72.

1105. **Cuculus saturatus.** *The Himalayan Cuckoo.*

Cuculus saturatus, *Hodgson, Blyth, J. A. S. B.* xii, p. 942 (1843); xv, p. 18; *Blanf. P. Z. S.* 1893, p. 319.

Cuculus himalayanus, *apud Blyth, Cat.* p. 71; *Horsf. & M. Cat.* ii, p. 704; *Jerdon, B. I.* i, p. 323; *id. Ibis,* 1872, p. 12; *Biddulph, Ibis,* 1881, p. 50; *Marshall, Ibis,* 1884, p. 410; *nec Vigors.*

Cuculus striatus, *apud Blyth, Ibis,* 1866, p. 359; *Bulger, Ibis,* 1869, p. 157; *Hume, S. F.* ii, p. 190; iv, p. 288; xi, p. 70; *id. Cat.* no. 200; *Blyth, Birds Burm.* p. 79; *Hume & Dav. S. F.* vi, p. 156: *Scully, S. F.* viii, p. 254; *Davison, S. F.* x, p. 359; *Oates, B. B.* ii, p. 105; *id. Ibis,* 1889, p. 356; *nec Drapiez.*

Cuculus intermedius, *apud Shelley, Cat. B. M.* xix, p. 252; *Oates in Hume's N. & E.* 2nd ed. ii, p. 381; *nec Vahl.*

Tong-ting vyang, Lepcha.

When adult similar to *C. canorus*, except that the upper parts are much darker, pure blackish ashy; the lower parts are generally pale buff with the black bands broader and more regular, and the edge of the wing is pure white. The size is always smaller and the bill a little stronger. The young pass through two stages, in neither of which is there a white nuchal spot.

In the first stage the upper plumage is blackish brown, the feathers margined with white; chin and throat almost entirely black; rest of the lower parts white, broadly banded with black. In the second stage the whole upper plumage with the tail is blackish barred with chestnut, the lower banded white and black, throat and breast tinged with rufous. The transition from each stage to the next is gradual, and every intermediate plumage may be found.

Upper mandible and tip of lower horny green, rest of lower yellowish horny; iris, feet, and gape yellow. Young birds have the iris brown.

Length about 12; tail 6; wing 6·6 to 7·8; tarsus ·75; bill from gape 1·15.

Distribution. During the breeding-season this Cuckoo is found in various parts of Eastern Asia, from the Himalayas to Siberia. It has also been shot in the cold season at Lucknow and Jodhpur, and in May in Fatehgarh, but is rare in India south of the Himalayas *. It is more common in Burma, the Andamans and Nicobars, and throughout the Malay Peninsula, ranging to New Guinea and Australia.

Habits, &c. The ordinary call of this bird in the breeding season, which begins later than that of *C. canorus*, is of four syllables, and, according to Jerdon, resembles that of the Hoopoe repeated, *hoot-hoot-hoot-hoot*, with a higher note at the commencement, only heard when the bird is very near. Hume (S. F. xi, p. 70) gives a somewhat different account, but Jerdon's statement has been confirmed by other observers. According to Swinhoe's observations in Formosa and Seebohm's in Siberia, *C. saturatus* also utters a monosyllabic note, but this has not been noticed in India. The breeding-season is in June, and the eggs, in the Himalaya, are commonly laid in the nest of *Trochalopterum lineatum*. An egg taken from a female shot in Kashmir is white, sparsely speckled with olive-brown and purplish grey, and measures ·89 by ·6. According to Captain Hutton, the young Cuckoo, after it leaves the nest, is fed by the adults, he having shot one of the latter in the act.

1106. **Cuculus poliocephalus.** *The Small Cuckoo.*

? Cuculus intermedius, *Vahl, Skriv. Nat. Selsk.* iv, p. 58 (1789).
Cuculus poliocephalus, *Latham, Ind. Orn.* i, p. 214 (1790); *Blyth,*

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* Davison (S. F. x, p. 359), states that it occurs in the Wynaad, but I have elsewhere (P. Z. S. 1893, p. 318) shown that there must, I think, have been a mistake.

Cat. p. 71; *Horsf. & M. Cat.* ii, p. 704; *Jerdon, B. I.* i, p. 324; *id. Ibis,* 1872, p. 13; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 23; *Bulger, Ibis,* 1869, p. 157; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 155: *Fairbank, S. F.* iv, p. 255; *Davidson & Wend. S. F.* vii, p. 78; *Hume Cat.* no. 201; *id. S. F.* xi, p. 71; *Legge, Birds Ceyl.* p. 231; *Vidal, S. F.* ix, p. 54; *Davidson, S. F.* x, p. 299; *Barnes, Birds Bom.* p. 124; *Oates, Ibis,* 1889, p. 357; *id. in Hume s N. & E.* 2nd ed. ii, p. 382; *Shelley, Cat. B. M.* xix, p. 255.

Cuculus bartletti, *Layard, A. M. N. H.* (2) xiii, p. 452 (1854).

Dang-hlem, Lepcha; *Pichu-giapo,* Bhotia.

Adults similar to *C. canorus,* but much smaller, with the lower plumage, and especially the lower tail-coverts, tinged with buff, and with broader black bars on the breast.

The young pass through three stages before arriving at maturity. The first resembles the corresponding plumage of *C. saturatus,* and at this period the two can only be distinguished by size. The second stage resembles the first of *C. canorus* in many respects. The white margins on the upper plumage are reduced, a white nuchal spot and sometimes a half-collar are assumed, and the chin and throat are partially cross-barred with white and tinged with dark rufous.

In the third stage the upper parts, wings, and tail are bright chestnut barred with black; the black bars in the older birds disappear on the neck, rump, and upper tail-coverts, and nearly so on the head; the lower plumage is very regularly barred with black, and the throat and breast are tinged with chestnut; there is no nuchal patch nor collar.

From this stage the adult plumage is assumed gradually, ashy patches appearing on the upper parts and the rufous bars disappearing on the wing and tail. The throat and breast at the same time turn ashy.

Bill blackish, base of lower mandible, gape, and eyelid yellow; iris brown; feet yellow (*Legge*).

Length about 10; tail 4·9 to 5·4; wing 5·7 to 6·1; tarsus 0·68: bill from gape ·95.

Distribution. Throughout the Himalayas from April till October, and farther north in China and Japan. In the cold season this Cuckoo is found in various parts of the Indian Peninsula and Ceylon, also in the Malay Peninsula, Java, and Borneo. It occurs in the hills south of the Assam valley, but has not been recorded from Burma. It also inhabits Madagascar and Africa south of 6° N. lat.

Habits, &c. This species begins to breed even later than *C. saturatus,* being rarely heard at Darjiling, according to Jerdon, "before the end of May and continuing till the middle of July. It is a very noisy bird and has a loud peculiar unmusical call of several syllables, which it frequently utters. The Bhotias attempt to imitate this in their name for the species." The eggs are not known with certainty.

1107. **Cuculus micropterus.** *The Indian Cuckoo.*

Cuculus micropterus, *Gould, P. Z. S.* 1837, p. 137; *Jerdon, B. I.* i, p. 326; *id. Ibis,* 1872, p. 13; *King, J. A. S. B.* xxxvii, pt. 2, p. 214; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 267; *Holdsworth, P. Z. S.* 1872, p. 430; *Walden, Ibis,* 1873, p. 304; *Hume, S. F.* ii, p. 191; iii, p. 79; ix, p. 248; xi, p. 71; *Blyth & Wald. Birds Burm.* p. 79; *Hume, Cat.* no. 203; *Fairbank, S. F.* iv, p. 255; *Davidson & Wend. S. F.* vii, p. 79; *Ball, ibid.* p. 207; *Cripps, ibid.* p. 264; *Vidal, S. F.* ix, p. 55; *Bingham, ibid.* p. 167; *Butler, ibid.* p. 388; *Legge, Birds Ceyl.* p. 228; *Davison, S. F.* x, p. 359; *Oates, B. B.* ii, p. 104; *Marshall, Ibis,* 1884, p. 411; *Barnes, Birds Bom.* p. 125; *Davidson, Jour. Bom. N. H. Soc.* i, p. 180; *Shelley, Cat. B. M.* xix, p. 241.

Cuculus affinis, *Hay, Blyth, J. A. S. B.* xv, p. 18 (1846).

Cuculus striatus, *apud Blyth, Cat.* p. 70; *Horsf. & M. Cat.* ii, p. 703; *Jerdon, B. I.* i, p. 328.

Boukotako, Beng.; *Takpo,* Lepch.; *Kankatong,* Bhot.; *Kyphulpakka,* Mussooree; *Kupulpukki,* Chamba.

Bill stronger than in the other Indian species.

Coloration. The head and neck above and at the sides dark ashy, remainder of upper plumage rich brown; the quills barred with white on their inner webs; tail with a broad subterminal black band and white tip; a series of alternating white and black marks along the shafts of the rectrices and white or rufous indentations on both edges; chin, throat, and upper breast pale ashy; rest of lower parts creamy white, with black cross-bars about half as broad as the white interspaces; under wing- and tail-coverts and vent with narrower and more distant cross-bars. The *female* only differs in having the throat and breast browner.

The young bird has the head and neck above broadly barred with rufescent white (in some these parts are chiefly white) and each feather of the upper plumage tipped with rufescent; the whole lower plumage buff, broadly barred with dark brown, and the tail more banded than in adults and with the spots more rufous. Immediately after this, the nestling garb, has been assumed, the white and rufous margins to the upper plumage commence to disappear, the throat and upper breast turn to ashy, and the bars on the lower plumage grow more defined. Birds that leave the nest in May are almost in adult plumage in October, retaining only the rufous tips to the upper wing-coverts and secondaries, and they acquire a rufous band across the upper breast, which is ultimately lost except by females.

Upper mandible horny black, lower mandible and a patch under the nostrils dull green; iris rich brown, eyelids greenish plumbeous, the edges deep yellow; gape and legs yellow (*Oates*).

Length about 13; tail 6 to 6·5; wing 7·5 to 8·5; tarsus ·8; bill from gape 1·3.

Distribution. Common throughout the Himalayas and extending into China, Japan, and Eastern Siberia in summer. Found also generally distributed over the Peninsula of India and Ceylon, not in the Punjab, Sind, or Rajputana, rarer in the south, but not uncommon in the forests of the Eastern Central Provinces and Bengal, and extending through the hill countries south of Assam and the Burmese territories to Malacca, Java, Borneo, and the Moluccas.

Habits, &c. Scarcely anything appears known about the migration and breeding of this Cuckoo. It certainly breeds in the Himalayas and Assam hills and probably in other hill-ranges, perhaps in the plains also. Its call is a fine melodious whistle, represented by the names *Boukotako* and *Kyphulpakka*. In flight, habits, and food it resembles *C. canorus.*

Genus **HIEROCOCCYX**, S. Müller, 1842.

Structurally this genus only differs from *Cuculus* in having rather shorter wings, with the primaries extending from one-fifth to one-third the length of the closed wing beyond the ends of the secondaries; sometimes the third primary is longest, sometimes the fourth. The coloration is remarkable, even amongst Cuckoos, for its close imitation of Hawks and Falcons; not only is the adult garb Accipitrine in character, but the plumage of the young resembles that of several immature birds of prey. The resemblance in plumage and flight to Hawks is quite unexplained, though, as it is sufficient to cause great alarm to small birds in general, it is probably connected with breeding-habits.

In all species of *Hierococcyx* the tail is broad with distinct dark cross-bars; the plumage above is uniform or nearly so in adults, mixed with rufous bars in the young; below it is spotted in the young, but generally becomes nearly uniform or transversely banded in the adult stage. Sexes alike.

This genus ranges throughout Eastern Asia from Siberia to India and the Malay Peninsula; it is also found in all the Malay islands. Four species inhabit India or Burma.

Key to the Species.

a. No distinct dark cheek-band from the eye.	
a'. Abdomen transversely banded in adults.	
a''. Back in adults brown: wing over 8·5. .	*H. sparverioides*, p. 211.
b''. Back in adults ash-grey: wing 7 to 8. .	*H. varius*, p. 213.
b'. Abdomen never banded; back in adults blackish grey: wing 6·7 to 7·4	*H. nisicolor*, p. 214.
b. A distinct dark cheek-stripe	*H. nanus*, p. 215.

1108. **Hierococcyx sparverioides.** *The Large Hawk-Cuckoo.*

Cuculus sparverioides, *Vigors, P. Z. S.* 1831, p. 173; *Blyth, J. A S. B.* xi, p. 898; xii, p. 240; *id. Cat.* p. 70.

Hierococcyx sparverioides, *Bonap. Consp. Av.* i. p. 104; *Horsf. & M. Cat.* ii, p. 699; *Jerdon, B. I.* i, p. 331; *Blyth, Ibis,* 1866, p. 362; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 23; *Jerdon, Ibis,* 1872, p. 14; *Hume, S. F.* iii, p. 80; ix, p. 248; xi, p. 72; *id. Cat.* no. 207; *Armstrong, S. F.* iv, p. 311; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 70;

Hume & Dav. S. F. vi, p. 157; *Ball, S. F.* vii, p. 207; *Scully, S. F.* viii, p. 256; *Davison, S. F.* x, p. 359; *Oates, B. B.* ii, p. 108; *Marshall, Ibis,* 1884, p. 411; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 581; vii, p. 380; *Oates in Hume's N. & E.* 2nd ed. ii. p. 384; *Shelley, Cat. B. M.* xix, p. 232.
Cuculus strenuus, *Gould, P. Z. S.* 1856, p. 96.
Hierococcyx strenuus, *Hume, P. A. S. B.* 1872, p. 71.

Bara Bharao, Nepal; *Nimbin-piyul,* Lepch.

Coloration. The adult has the lores whitish; crown, nape, and sides of head and neck ashy, varying from rather pale to blackish, passing into the colour of the back, which with the remainder of the upper parts is rich brown with a purplish gloss; quills barred with white on the inner webs; tail brown above, pale brownish grey below, tipped with white or rufous white, and crossed outside the coverts generally by 3, sometimes by 4, black or dark brown bands, the last the broadest, and the last but one the narrowest and separated from the last by a narrow space; beneath the chin is dark ashy, with a whitish moustachial stripe on each side; throat white, more or less streaked with ashy and rufous and passing into the more rufous upper breast, which also has ashy shaft-stripes; lower breast, flanks, and abdomen white, more or less suffused with rufous and transversely banded with brown; vent, lower tail-coverts, and edge of wing white.

The young is brown above, the feathers margined and faintly banded with rufous, and the lower parts are rufescent white, with large streaks and drops of dark brown, becoming arrowhead marks on the flanks; the chin is blackish and there is a slight rufous collar. As the bird grows older the head becomes dark ashy, the markings on the flanks and abdomen assume the appearance of bands, and there is a gradual passage into the adult.

Upper mandible dark brown, lower greenish; gape and orbit yellow; iris yellow or orange in the adults, brown in the young; legs deep yellow; claws paler yellow.

Length about 15; tail 8·25 to 9·25; wing 8·5 to 10; tarsus 1·05; bill from gape 1·4. Females are smaller than males, and Burmese specimens larger than Himalayan, which again exceed Nilgiri birds in size.

Distribution. Throughout the Himalayas as far west as Chamba, ascending in summer to elevations of 9000 ft. or more; probably scattered here and there over the better wooded parts of the Indian Peninsula in the cold season, but only recorded from Raipur in the Central Provinces. Common on the Nilgiris in Southern India, but not observed on the Palnis, the Travancore ranges, nor the Ceylon hills. To the eastward this Cuckoo is found throughout the hills south of Assam and Burma, ranging to China, Japan, the Philippines, the Malay Peninsula, and Borneo.

Habits, &c. Probably a resident in the Himalayas and Nilgiris and in Burma, though it may be found at higher elevations in the summer. It has a loud melodious call, similar to that of *H. varius,* and heard about Darjiling from April to June. Its flight is swift and graceful. Its food, partly at all events, consists of caterpillars. According to Mr. Hodgson's notes, the female lays her eggs in the nests of *Trochalopterum nigrimentum* and *Ixops nepalensis* amongst other birds; but on the Nilgiris this bird is believed to have been observed by both Miss Cockburn and Mr. R. H. Morgan to build its own nest, of sticks, without lining, and to lay 3 or 4 nearly white slightly speckled eggs, measuring 1·39 by 1·05.

1109. **Hierococcyx varius.** *The Common Hawk-Cuckoo.*

Cuculus varius, *Vahl, Skriv. Nat. Selsk.* iv, p. 61 (1797); *Blyth, Cat.* p. 70; *Layard, A. M. N. H.* (2) xiii, p. 452.
Cuculus lathami, *Gray in Hardwicke's Ill. Ind. Zool.* ii, pl. 34, fig. 2.
Hierococcyx varius, *Horsf. & M. Cat.* ii, p. 700; *Jerdon, B. I.* i, p. 329; *Blyth, Ibis,* 1866, p. 361; *Adam, S. F.* i, p. 373; *Butler, S. F.* iii, p. 460: *Bourdillon, S. F.* iv, p. 392; *Fairbank, S. F.* v, p. 397; *Vidal, S. F.* vii, p. 55; *Ball, ibid.* p. 207; *Cripps, ibid.* p. 264; *Hume, Cat.* no. 205; *Scully, S. F.* viii, p. 255; *Legge, Birds Ceyl.* p. 240; *Reid, S. F.* x, p. 27; *Davison, S. F.* x, p. 359; *Barnes, Birds Bom.* p. 126; *Davidson, Jour. Bom. N. H. Soc.* i, p. 182; *Oates in Hume's N. & E.* 2nd ed. ii, p. 383; *Shelley, Cat. B. M.* xix, p. 234.
Hierococcyx nisoides, *Blyth, Ibis,* 1866, p. 362; *Hume, S. F.* vii, p. 371.

Kupak or *Upak, Pupiya,* H.; *Chok-gallo,* Beng.; *Bim-pi-yul,* Lepcha; *Kutti-pitta,* Tel.; *Zakkhat,* Deccan; *Irolan,* Mal. This is the "Brain-fever bird" of Anglo-Indians.

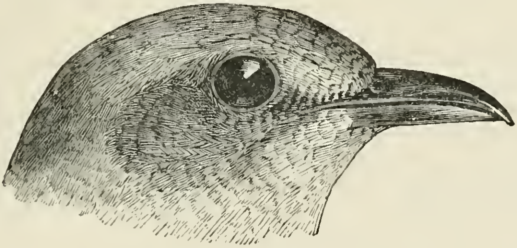

Fig. 61.—Head of *H. varius,* $\frac{1}{1}$.

Coloration. Upper plumage ash-grey; quills browner, their inner webs broadly barred with white, some white on outer upper tail-coverts; tail grey, tipped with rufescent and usually with 4 bars (occasionally 5) beyond the coverts, the terminal bar broadest, the others each with a pale or rufescent posterior border, and the penultimate much nearer to the last than to the antepenultimate; occasionally the penultimate band is faint or wanting; sides of head ashy, lores and cheeks whitish; chin and throat white, more or less tinged with ashy; fore-neck and breast rufous mixed with pale ashy, lower breast with bars; abdomen white, anteriorly tinged rufous and with transverse grey bars, posteriorly like the under tail-coverts pure white; edge of wing the same.

The young above dark brown with rufous cross-bars; lower parts white, tinged with rufous in places and spotted with brown except on the lower abdomen and lower tail-coverts; tail marked as in the adults, but more rufous. The sides of the neck soon become rufous and form a partial collar, the spots on the flanks change to arrowhead marks and interrupted bars, then the breast grows rufous and the cap grey. From this there is a gradual passage into the adult plumage.

Culmen and tip of bill black, the rest greenish; iris yellow or orange in adults, brownish in the young; gape, orbit, feet, and claws yellow, pale or bright according to age.

Length about 13·5; tail 7; wing 6·75 to 8; tarsus ·95; bill from gape 1·25.

Distribution. The whole of India and Ceylon, extending to Eastern Bengal (Dacca, Furreedpore), but not to Assam, the Gáro hills, nor Cachar, and west to Mount Abu, Rajputana, but not to Sind nor the Punjab. This Cuckoo occurs along the base of the Himalayas from Kumaun to Bhután, ascending the hills in summer to about 7000 feet. It is found to a similar elevation on the Nilgiris and on the Ceylon hills, but on the Palnis and Travancore ranges it is said not to ascend beyond about 1000 feet. Reported occurrences of this bird in Assam and Burma are probably due to error.

Habits, &c. A resident throughout its range, except in Ceylon, where this Hawk-Cuckoo is described by Legge as arriving in November. It is more common in well-wooded country, but is generally distributed throughout the Indian Peninsula, and is well known by its call, or, as Jerdon terms them, "its loud crescendo notes," which, as he says, sound something like *pipeeha, pipeeha*, each repetition higher in the scale. In the breeding-season from April till June this is frequently heard by night as well as by day. *H. varius* feeds partly on caterpillars, but largely, it is said, on fruits and buds. Its eggs are chiefly laid in the nests of various Babblers and have been taken in those of *Crateropus canorus*, *C. griseus*, and *Argya malcolmi*; they are blue and measure 1·05 by ·79.

1110. **Hierococcyx nisicolor.** *Hodgson's Hawk-Cuckoo.*

Cuculus nisicolor, *Hodgson, Blyth, J. A. S. B.* xii, p. 943 (1843).

Hierococcyx nisicolor, *Jerdon, B. I.* i, p. 330; iii, p. 871; *id. Ibis*, 1872, p. 14; *Blyth, Ibis*, 1866, p. 361; *Hume, S. F.* v, pp. 96, 347; xi, p. 72; *id. Cat.* no. 206; *Hume & Dav. S. F.* vi, p. 157; *Oates, B. B.* ii, p. 109; *id. in Hume's N. & E.* 2nd ed. ii, p. 383.

Hierococcyx fugax, *apud Shelley, Cat. B. M.* xix, p. 236, partim; *nec* Cuculus fugax, *Horsf.*

Ding-pit, Lepcha.

Coloration. Whole upper plumage, except the tail, uniform dark ashy; quills browner, with white bars on the inner webs; tail with alternating bands of brownish grey and black, the last black band broad, the last but one very narrow and close to the last one; extreme tip of tail rufous; sides of head and neck and the chin dark ashy; throat and front of neck white, sparingly streaked with ashy; breast, abdomen, and flanks ferruginous, streaked with pale ashy and frequently mixed with white; vent and under tail-coverts white.

In the young birds the upper plumage, sides of head and neck, chin, throat, and upper breast are very dark brown, with narrow rufous edges to the feathers, the quills are barred on both webs with rufous; tail as in adults; the breast, abdomen, and flanks white with broad black spots. The blackish brown of the throat and breast is soon lost, and the upper parts become barred with rufous, as in the young of *H. varius* and *H. sparverioides*, and there is the same gradual change to the adult plumage. At no time are there any cross-bands on the abdomen.

Upper mandible horny black, lower mandible and around nostrils pale green, gape greenish yellow; iris orange-red; eyelids, legs, feet, and claws bright yellow.

Length about 11·5; tail 5·6; wing 6·7 to 7·4; tarsus ·75; bill from gape 1·2.

Distribution. The Himalayas as far west as Nepal, and throughout Assam and Burma to the Malay Peninsula, but not apparently in the Malay Archipelago, where this species is replaced by *H. fugax*, a form with a larger bill and the bands on the tail as in *H. varius.*

Habits, &c. Apparently a resident species. Nothing is known of its breeding except that an egg, extracted from the oviduct of a female by Mandelli on June 5th, was olive-brown and measured ·89 by ·64.

1111. **Hierococcyx nanus.** *The Small Hawk-Cuckoo.*

Hierococcyx nanus, *Hume, S. F.* v, p. 490; *id. Cat.* no. 205 bis; *Hume & Dav. S. F.* vi, pp. 157, 502; *A. Müll. J. f. Orn.* 1882, p. 405; *Oates, B. B.* ii, p. 110; *Sharpe, Ibis,* 1890, p. 11; *Shelley, Cat. B. M.* xix, p. 238.

Coloration. Head above and nape dark brown to blackish ashy. A well-marked dark grey stripe from the anterior lower border of the eye down the cheek, separated by the whitish lower ear-coverts from the dark grey side of the head behind the eye; above this again, better marked in some specimens than in others, a line of white or rufous feathers forms a border to the crown; a rufescent collar round the hind-neck; rest of upper parts brown, more or less barred with rufous; quills with large bars of buff on inner webs, the whole inner webs near the base rufescent buff. Tail greyish brown, tipped white and with equidistant black bands, the last the broadest, the others subequal. Lower surface rufescent white, with dark brown shaft-stripes.

It is doubtful whether the adult is known, the plumage above described resembling the immature dress of other species.

Upper mandible and tip of lower dull black; lower mandible and base of upper greenish yellow; irides brown; eyelids, legs, feet, and claws orange-yellow (*Davison*).

Length about 11; tail 5·5; wing 5·7; tarsus ·8; bill from gape 1·1.

Distribution. Only known from South Tenasserim, the island of Salanga (Junk Ceylon) and Northern Borneo.

Genus **CACOMANTIS**, S. Müller, 1842.

This is a genus of small-sized Cuckoos resembling *Cuculus* in the changes of plumage, and to some extent in the coloration of the young and adult; but distinguished by much shorter wings, with the primaries only extending about one-third the length of the wing beyond the end of the secondaries, and by having the tail as long as the wing or longer.

About 10 species are known, ranging from India to Australia and the Fiji Islands; two of these are Indian.

Key to the Species.

a. Upper parts dark ashy.
  a′. Abdomen white or grey .... *C. passerinus*, adult, p. 216.
  b′. Abdomen rufous .... *C. merulinus*, adult, p. 218.
b. Upper parts brown and chestnut.
  c′. Crown and rump chiefly rufous, not regularly barred .... *C. passerinus*, juv., p. 216.
  d′. Upper parts barred throughout ...... *C. merulinus*, juv., p. 218.

1112. **Cacomantis passerinus.** *The Indian Plaintive Cuckoo.*

Cuculus passerinus, *Vahl, Skriv. Nat. Selsk.* iv, p. 57 (1797); *Legge, Birds Ceyl.* p. 235.
Cuculus tenuirostris, *J. E. Gray in Hardw. Ill. Ind. Zool.* ii, pl. 34, fig. 1 (1833–4); *Blyth, J. A. S. B.* xiii, p. 391; xviii, p. 805; *id. Cat.* p. 72, partim; *Layard, A. M. N. H.* (2) xiii, p. 453.
Polyphasia tenuirostris, *Horsf. & M. Cat.* ii, p. 698.
Polyphasia nigra, *apud Jerdon, B. I.* i, p. 333; *id. Ibis*, 1872, p. 14; *Simson, Ibis*, 1882, p. 87; *nec* Cuculus niger, *L.*
Cacomantis passerinus, *Cab. & Heine, Mus. Hein.* iv, p. 18 (1862); *Ball, S. F.* vii, p. 207; *Cripps, ibid.* p. 265; *Hume, Cat.* no. 208; *Vidal, S. F.* ix, p. 55; *Butler, ibid.* p. 388; *Davison, S. F.* x, p. 360; *Barnes, Birds Bom.* p. 127; *Oates in Hume's N. & E.* 2nd ed. ii, p. 385; *Shelley, Cat. B. M.* xix, p. 277.
Polyphasia passerina, *Jerdon, Ibis,* 1872, pl. 1; *Holdsworth, P. Z. S.* 1872, p. 431.
Ololygon passerinus, *Butler, S. F.* iii, p. 461; *Fairbank, S. F.* iv, p. 255.

Pousya, Mahr.; *Chinna katti pitta,* Tel.; *Koha,* Cing.

Coloration. In the adult the upper parts are dark ashy; the wings throughout brown, glossed outside with greenish bronze; inner webs of the quills with a white patch near the base; tail nearly black, tipped with white, the outer feathers obliquely banded with white on the inner webs, the white bands most developed on the outermost rectrices; lower parts ashy, paling on the abdomen; edge of wing, vent, and lower tail-coverts white. Occasionally there is no white and the bird is dark ashy throughout, as figured by Jerdon in the 'Ibis.'

The young at first are dark glossy brown above, each feather with a rufous edging; the lower parts are white with brown bars. and the throat and breast tinged with rufous; the tail is black, with broad white and rufous bars and markings.

In the second stage the whole upper plumage, with the sides of the head and neck, is bright chestnut, the back and wings broadly barred with black, the head, hind-neck, rump, and upper tail-coverts with merely a few black spots, and the tail with some irregular black shaft-marks, a larger subterminal black patch and a white tip to each feather. The lower plumage is white, narrowly banded with black; the chin, throat, and upper breast more or less suffused with chestnut.

In older birds of this stage, the head, hind-neck, back, rump, and tail-coverts become immaculate, the bars on the wings are resolved into spots; only the subterminal black patches remain on the tail-feathers, and many of the bars on the throat and breast fade away, these parts becoming bright chestnut. After this the adult plumage is rapidly assumed by the acquisition of ashy patches.

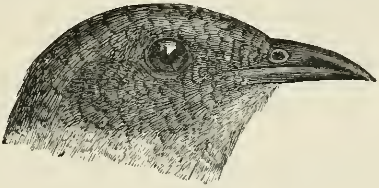

Fig. 62.—Head of *C. passerinus*, $\frac{1}{1}$.

Bill dark brown; mouth salmon-colour; iris reddish brown or sometimes yellowish; legs dingy yellow or brownish grey.

Length about 9; tail 4·5; wing 4·5; tarsus ·7; bill from gape 1.

Distribution. The greater part of India from the Himalayas to Ceylon inclusive, rare in the north-west, and although found at Mount Abu, wanting elsewhere throughout Rajputana and the Indus plains. This Cuckoo occurs in the Himalayas from Simla to Sikhim, ascending the hills to the westward up to about 9000 feet, according to Jerdon; and its range extends to Eastern Bengal, where it meets the next species. In the peninsula of India it is chiefly found in forest-regions, and is most abundant in Bengal, Orissa, the wooded tracts west of the latter, and on the hills in the neighbourhood of the Malabar coast.

Habits, &c. Jerdon describes this Cuckoo as haunting forests, groves, gardens, and low bush-jungle, wandering much, and having a plaintive call, which was represented by Elliot as *whĕ-whēw, whe-whē-ē-w.* In Ceylon and at Mount Abu this bird is said to be migratory, but elsewhere it is believed to be resident. The eggs have been taken in September by Miss Cockburn on the Nilgiris, in the nests of *Prinia inornata*. The young have been found in Dehra Dún by Mr. R. Thompson in nests of *Pyctorhis sinensis* and *Lanius erythronotus*. *C. passerinus* also lays in the nest of *Molpastes bengalensis*. The eggs are pale blue, blotched and spotted towards the large end with reddish brown and purple, and measure about ·8 by ·55.

1113. **Cacomantis merulinus.** *The Rufous-bellied Cuckoo.*

Cuculus merulinus, *Scop. Del. Flor. et Faun. Insubr.* ii, p. 89 (1786); *Strickland, J. A. S. B.* xiii, p. 391; *Blyth, Cat.* p. 72.
Cuculus flavus, *Gmel. Syst. Nat.* i. p. 421 (1788).
Cuculus sepulchralis, *S. Müll. Verhand. Land- en Volk.* p. 177, note (1839–1844).
Polyphasia merulina, *Horsf. & M. Cat.* ii, p. 697.
Cacomantis threnodes, *Cab. & Heine, Mus. Hein.* iv, p. 19 (1863); *Hume & Dav. S. F.* vi, p. 158; *Hume, S. F.* vii, p. 207; xi, p. 72; *id. Cat.* no. 209; *Cripps, S. F.* vii, p. 265; *Bingham, S. F.* ix, p. 167; *Oates, B. B.* ii, p. 111; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 568; vii, p. 428.
Cacomantis merulinus, *Cab. & Heine, Mus. Hein.* iv, p. 21; *Walden, Tr. Z. S.* viii, p. 54; ix, p. 160; *Shelley, Cat. B. M.* xix, p. 268.
Polyphasia tenuirostris, *apud Jerdon, B. I.* i, p. 335; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 98; *Simson, Ibis*, 1882, p. 87; *nec* Cuculus tenuirostris, *Gray*.
Polyphasia rufiventris, *Jerdon, Ibis*, 1872, p. 15.
Cacomantis passerinus, *Blyth & Wald. Birds Burm.* p. 80; *nec* Cuculus passerinus, *Vahl.*
Cacomantis rufiventris, *Armstrong, S. F.* iv, p. 312; *Wardl. Rams. Ibis*, 1877, p. 458; *Anderson, Yunnan Exped., Aves*, p. 587.

Chota bhrou, Beng.

Coloration. In the adult the head and neck all round are ashy, rather darker above; back, scapulars, and wings brown, slightly glossed with bronze; inner webs of quills with a white patch near the base; upper tail-coverts blackish and glossy, with ashy edges; tail black, tipped white and with oblique white bars on the inner webs of the outer feathers, most marked on the outermost; on the lower surface the pale ashy generally extends to the upper breast, but sometimes not so far; rest of lower parts, including the wing-lining, varying from rufous buff to ferruginous red, edge of wing whitish. Some birds (*C. threnodes*) are much darker than others.

The young bird is brown above, at first with a few rufous bars and tips to the feathers, but later with all the upper plumage and tail-feathers barred chestnut and black; lower parts white or rufous, with narrow brown bars throughout. This changes gradually into the adult plumage. In the last stage before the adult the whole under surface to the chin is rufous buff; this is the form known as *C. sepulchralis*. As so frequently occurs in Cuckoos, the changes are gradual and intermediate forms common.

Upper mandible and tip of lower dark horny, remainder of lower brownish orange; iris pale yellow, sometimes brown and occasionally crimson; feet brownish yellow or deep yellow.

Length about 9; tail 4·2 to 5·5; wing 4·3; tarsus ·75; bill from gape ·95.

Distribution. Two specimens were obtained by Hume from Raipur; no other occurrences of this species have been recorded from the Indian Peninsula (one is labelled Madras in the British Museum, but evidently by mistake). This Cuckoo is found about Calcutta, throughout Eastern Bengal, Assam, and the hills to the southward, the Eastern Himalayas from Nepal, also in Burma, Southern China, and the Malay Peninsula and islands, including the Philippines.

Habits, &c. The Rufous-bellied Cuckoo is found chiefly in brushwood and about clearings. It has a less plaintive call than *C. passerinus* and is a very noisy bird. The eggs have not been identified with certainty; Captain Feilden found what he took for them at Thayetmyo in the nests of Tailor-birds.

Genus **PENTHOCERYX**, Cabanis, 1862.

This genus resembles *Cacomantis* in structure and size, the only structural distinctions being that the bill is much stouter and broader up to the tip, which is blunt when seen from above, and that the tail-feathers become narrower behind instead of remaining of the same breadth. The wing is shaped as in *Cacomantis*, the primaries only exceeding the secondaries by one-third the length. But the present form is distinguished from all other true Cuckoos by undergoing no change of plumage and by retaining in the adult stage a barred livery that in the other genera is confined to the young. This appears to me a stronger reason for adopting Cabanis's genus than the slight structural distinctions mentioned; but I think that the only species of the present group, if not classed separately, should be referred to *Cacomantis* rather than to *Cuculus*.

1114. **Penthoceryx sonnerati.** *The Banded Bay Cuckoo.*

Cuculus sonneratii, *Latham, Ind. Orn.* i, p. 215 (1790); *Blyth, Cat.* p. 72; *Layard, A. M. N. H.* (2) xiii, p. 452; *Jerdon, B. I.* i, p. 325; *Blyth, Ibis,* 1866, p. 360; *Holdsworth, P. Z. S.* 1872, p. 430; *Walden, Tr. Z. S.* viii, p. 55; *Blyth & Wald. Birds Burm.* p. 80; *Fairbank, S. F.* iv, p. 255; *Hume & Dav. S. F.* vi, p. 156; *Anderson, Yunnan Exped., Aves,* p. 587; *Hume, S. F.* vii, p. 207; *id. Cat.* no. 202; *Legge, Birds Ceyl.* p. 233; *Vidal, S. F.* ix, p. 54; *Butler, ibid.* p. 388; *Oates, B. B.* ii, p. 107; *id. in Hume's N. & E.* 2nd ed. ii, p. 382; *Barnes, Birds Bom.* p. 125; *Shelley, Cat. B. M.* xix, p. 262.

Cuculus pravata, *Horsf. Tr. Linn. Soc.* xiii, p. 179 (1821); *Strickland, J. A. S. B.* xiii, p. 390.

Cuculus venustus, *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 141 (1844).

Polyphasia sonnerati, *Horsf. & M. Cat.* ii, p. 699.

Penthoceryx sonnerati, *Cab. & Heine, Mus. Hein.* iv, p. 16; *Walden, Ibis,* 1872, p. 367.

Ololygon tenuirostris, *apud Hume, S. F.* ii, p. 472; iii, p. 80; *nec* Cuculus tenuirostris, *Gray.*

Basha katti pitta, Tel.; *Punchi koha*, Cinghalese.

Coloration. Upper plumage throughout alternately barred with rufous and blackish brown, the latter glossed with green; on the forehead the rufous is partly replaced by white; wing-feathers dark brown, the outer webs narrowly, the inner broadly indented with rufous; tail-feathers dark brown, tipped with white, margins indented with rufous, the rufous edges increasing on the outer feathers till the outermost are rufous with imperfect black bars and a subterminal brown band; lower plumage throughout buffy white, with numerous narrow dark brown cross-bars; sides of head and neck the same, the ear-coverts rufous and brown. In very old birds the rufous on the upper parts is reduced and the colour becomes darker. The young differ in no important particular from adults.

Upper mandible and tip of lower black, rest of lower greenish yellow; iris brown of different shades; legs and feet brownish slaty or greenish.

Length about 9·5; tail 4·75 to 5·2; wing 4·6 to 5; tarsus ·7; bill from gape 1·1. Malay specimens (*P. pravatus*) are smaller, the wing measuring 4 to 4·6 inches.

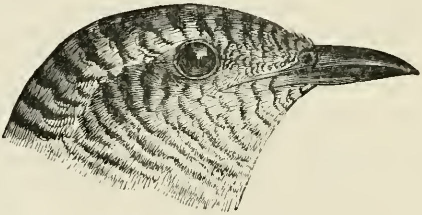

Fig. 63.—Head of *P. sonnerati*, $\frac{1}{1}$.

Distribution. A resident species, common in Ceylon and in the forests near the Malabar coast, rare in the Bombay Konkan, and very rare elsewhere in the Indian Peninsula and in the Western Himalayas, though recorded from Mussooree, Kumaun, Manbhoom, and Raipur; less rare in the Eastern Himalayas, but still far from common, and ranging throughout Burma and the Malay Peninsula to Sumatra, Borneo, and Java.

Habits, &c. A shy bird with, according to Legge, a curious far-sounding whistle, syllabized as *whī, whip-whiwhip*, and a peculiar call-note, commencing in a low key, then suddenly changing to a higher, and then dying away. This Cuckoo feeds chiefly on caterpillars. Eggs supposed to belong to it have been found in the nest of *Otocompsa fuscicaudata*, measuring ·82 by ·62.

Genus **CHRYSOCOCCYX**, Boie, 1827.

This is a genus of small Cuckoos distinguished by the sexes differing in plumage, and by the male exhibiting brilliant colours with a metallic lustre. The structure presents few peculiarities;

the tail is short and slightly rounded, the wings long and pointed, the primaries exceeding the secondaries by more than one-third the length of the closed wing. The tarsus is feathered almost throughout.

In the British Museum Catalogue the African forms are placed in a separate genus, but I do not think them entitled to distinction. The genus in the sense here accepted inhabits the Ethiopian, Oriental, and Australian regions and extends to New Zealand.

Key to the Species.

Upper parts green	*C. maculatus*, ♂ ad., p. 222.
Upper parts violet	*C. xanthorhynchus*, ♂ ad., p. 221.
Upper parts coppery bronze	*C. maculatus*, ♀ & juv., p. 222.
Head above light rufous, mantle green.	*C. xanthorhynchus*, ♀ & juv., [p. 221

1115. **Chrysococcyx xanthorhynchus.** *The Violet Cuckoo.*

Cuculus xanthorhynchus, *Horsf. Trans. Linn. Soc.* xiii, p. 179 (1821); *Walden, Ibis*, 1876, p. 346.

Chrysococcyx xanthorhynchus, *Blyth, J. A. S. B.* xi, p. 919; *id. Cat.* p. 73; *Horsf. & M. Cat.* ii, p. 706; *Walden, Ibis*, 1874, p. 137; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 155; *Blyth, Birds Burm.* p. 80; *Wardl. Ramsay, Ibis*, 1877, p. 458; *Hume, Cat.* no. 211 bis; *id. S. F.* ix, p. 248; xi, p. 75; *Oates, S. F.* x, p. 193; *id. B. B.* ii, p. 114; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 432.

Chalcococcyx xanthorhynchus, *Cab. & Heine, Mus. Hein.* iv, p. 15; *Hume, S. F.* ii, p. 191; iii, p. 81; *Hume & Dav. S. F.* vi, pp. 161, 506; *Shelley, Cat. B. M.* xix, p. 289.

Chrysococcyx limborgi, *Tweeddale, P. Z. S.* 1877, p. 366; *id. S. F.* vii, p. 319; *Hume, Cat.* no. 211 quat.; *Bingham, S. F.* ix, p. 168; *Oates, B. B.* ii, p. 116.

Lamprococcyx malayanus, *Hume & Dav. S. F.* vi, p. 503.

Chrysococcyx malayanus, *Hume, Cat.* no. 211 ter; *id. S. F.* xi, p. 76.

Coloration. Male. Head and neck all round and upper breast with all the upper parts glossy violet; quills blackish brown; outer tail-feathers tipped white and the outermost pair with about three interrupted white bars; lower breast, abdomen, wing-lining, and under tail-coverts marked with alternating broad cross-bars of white and violet or green.

Female. Above greenish bronze with a coppery tinge, a little white on the forehead; tips of wing and tail-feathers greener; quills brown, their inner edges chestnut except near the tips; all tail-feathers except the middle pair banded green and chestnut and tipped white, on the outer pair the chestnut on the outer web is replaced by white; lower parts with sides of the head and neck alternately banded white and bronze-green, the bands wider behind.

The nestling is rufous except on the breast and abdomen; the head and neck with broad dusky longitudinal streaks; body above and below and the tail barred with dark brown, but not the quills. This passes into a phase of plumage that is barred throughout rufous and glossy green above, white and green below; in some male specimens the upper parts are chiefly green, but usually some violet feathers appear. The plumage of the young is never the the same as that of the adult female, but at one stage the two sexes only differ in the barring on the lower parts being broader in males.

In males the bill is orange-yellow; iris red; eyelids green, the edges red; mouth orange; legs brownish green; claws black. In females and young birds only the base of the bill is orange, terminal portion dark brown (*Oates*).

Length about 6·5; tail 2·8; wing 4; tarsus ·6; bill from gape ·75.

The type of *C. limborgi*, now in the British Museum, has a broad pure white nuchal collar. It is probably an accidental variety, but may possibly belong to a distinct form. It was obtained at the base of Muleyit, Tenasserim.

Distribution. From Dibrugarh in Assam, Cachar and Tipperah, throughout Burma and the Malay Peninsula to Sumatra, Borneo, and Java, but nowhere common. Found also in the Andaman and Nicobar Islands.

Habits, &c. According to Oates this Cuckoo is found in dense groves, and lives mainly on caterpillars; it is a silent bird and quiet in its movements. Its egg is unknown.

1116. **Chrysococcyx maculatus.** *The Emerald Cuckoo.*

Trogon maculatus, *Gmel. Syst. Nat.* i, p. 404 (1788).
Chrysococcyx lucidus, *apud Blyth, J. A. S. B.* xi, p. 917; xiii, p. 390; *nec* Cuculus lucidus, *Gm.*
Chrysococcyx smaragdinus, *Blyth, J. A. S. B.* xv, p. 53 (1846).
Chrysococcyx chalcites, *apud Blyth, Cat.* p. 73; *nec* Cuculus chalcites, *Illiger.*
Chrysococcyx hodgsoni, *Moore, Horsf. & M. Cat.* ii, p. 705 (1856–8); *Jerdon, B. I.* i, p. 338; *Godw.-Aust. J. A. S. B.* xli, pt. 2, p. 142; *Davidson, S. F.* x, p. 299.
Lamprococcyx maculatus, *Walden, Ibis,* 1869, p. 334; *Hume & Dav. S. F.* vi, pp. 161, 502; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 581.
Chrysococcyx maculatus, *Blyth & Wald. Birds Burm.* p. 80; *Walden, Ibis,* 1876, p. 345; *Wardl. Ramsay, Ibis,* 1877, p. 458; *Hume, Cat.* no. 211; *id. S. F.* ix, p. 248; xi, p. 74; *Bingham, S. F.* ix, p. 167; *Oates, B. B.* ii, p. 113.
Cuculus maculatus, *Walden, Ibis,* 1876, p. 345; *Legge, Birds Ceyl.* p. 238.
Chalcococcyx maculatus, *Shelley, Cat. B. M.* xix, p. 291; *Oates in Hume's N. & E.* 2nd ed. ii, p. 387.

Ang-pha, Lepcha.

Coloration. Male. Head and neck all round and upper breast with all the upper parts glossy green, tinged in parts with bronze; tips of primaries bluish; quills brown, inner webs with an elongate white patch, forming on all but the first three the basal part of the inner margin; outer tail-feathers tipped white, outermost pair with three white bars; lower breast, abdomen, and wing-lining broadly banded alternately with white and metallic green or bronze; under tail-coverts green, with a few white bars.

Female and *immature male.* Crown and back of neck pale rufous, generally with white and dark brown bars; back, wings, and tail metallic green, much tinged with yellow or coppery bronze; quills brown, each with a rufous patch on the inner web; median tail-feathers broadly tipped with coppery brown; outer tail-feathers barred chestnut and black and tipped white, on the outermost pair the chestnut is partly replaced by white; lower parts barred white and copper, more broadly on the abdomen.

The young has the head and neck rufous all round, but barred below.

Bill bright orange-yellow, tipped black; irides red-brown; legs and feet dark brownish green.

Length 7; tail 2·9; wing 4·4; tarsus ·6; bill from gape ·85.

Distribution. The Himalayas, below about 4000 feet, as far west as Kumaun, also Assam and the hills to the southward, Manipur, throughout Burma, Siam, and the Malay Peninsula to Sumatra and the Andaman and Nicobar Islands; almost everywhere rare. Although the species is said to have been originally brought from Ceylon, and is stated by Blyth and Jerdon to have been procured in Central India (probably Chutia Nagpur), its occurrence in the Indian Peninsula and Ceylon must be regarded as very doubtful.

Habits, &c. According to Davison this Cuckoo has a fine clear whistling call of three notes, rapidly uttered. It feeds entirely on insects (in Assam, according to Mr. Cripps, on ants), it keeps to high branches of trees in forests, and calls on moonlight nights as well as in the day. Hume attributes to the present species a nearly uniform pale pinkish chocolate egg, found in the nest of *Stachyrhidopsis ruficeps*, and measuring ·8 by ·62.

Genus **SURNICULUS**, Lesson, 1831.

The present genus is remarkable for its extraordinary resemblance in structure and coloration to a Drongo or King-Crow (*Dicrurus*). The plumage is almost entirely black, and the tail forked, owing to the lateral rectrices being turned outwards; the extent to which they diverge is variable, and the median rectrices are straight. All the tail-feathers are nearly equal in length, except the outermost pair, which are much shorter. In other respects there is no important difference from *Cacomantis*, except that the young only differ from the adults in having a few white spots and less glossy plumage.

The genus ranges throughout the greater part of the Oriental region, a single species occurring in India.

1117. **Surniculus lugubris.** *The Drongo Cuckoo.*

Cuculus lugubris, *Horsf. Tr. Linn. Soc.* xiii, p. 179 (1821).
Pseudornis dicruroides, *Hodgs. J. A. S. B.* viii, p. 136 (1839).
Cuculus dicruroides, *Jerdon, Madr. Jour. L. S.* xi, p. 221 (1840);

Blyth, J. A. S. B. xi, p. 915; xii, p. 244; *Layard, A. M. N. H.* (2) xiii, p. 453.
Surniculus dicruroides, *Blyth, Cat.* p. 72; *Horsf. & M. Cat.* ii, p. 696; *Jerdon, B. I.* i, p. 336; *Holdsworth, P. Z. S.* 1872, p. 431; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 14.
Surniculus lugubris, *Blyth, Cat.* p. 72; *Horsf. & M. Cat.* ii, p. 695; *Blyth & Wald. Birds Burm.* p. 80; *Hume & Dav. S. F.* vi, pp. 159, 502; *Anders. Yunnan Exped. Aves*, p. 587; *Ball, S. F.* vii, p. 207; *Hume, Cat.* no. 210; *id. S. F.* ix, p. 248: xi, p. 74; *Legge, Birds Ceyl.* p. 243; *Barnes, Birds Bom.* p. 128; *Oates, B. B.* ii, p. 112; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 380; *Shelley, Cat. B. M.* xix, p. 227.

Kar-rio-vyem, Lepcha.

Coloration. Black throughout, with a changeable green and purple gloss, brightest above; usually, but not always, there are two or three white feathers on the nape, not unfrequently a few white spots remain on the upper tail-coverts; there is always a white spot on the inner web of the first primary and an oblique band formed by patches on the inner webs of the other quills: part of the thigh-coverts and markings on the lower tail-coverts are white, and there are white bars, generally imperfect, on the outermost tail-feathers and a few spots on the next pair.

In the young there is less gloss on the feathers, and small terminal white spots are irregularly dispersed over the plumage: the white markings are more developed on the tail-feathers, and the under wing-coverts are partly white.

Bill black; iris brown; legs plumbeous; claws blackish (*Oates*).

Length about 10; tail 5·25; wing 5·5; tarsus ·65; bill from gape 1·1.

Distribution. Apparently very rare in the Peninsula of India, having been observed only near Raipur, on the Godávari below Sironcha, and perhaps at another locality in the Southern Central Provinces (Jerdon's locality in "Central India"), also in the Wynaad and Malabar coast-land. This bird is more common in Ceylon, but is locally distributed. It is found at low elevations in the Himalayas as far west as Nipal, and from the Eastern Himalayas throughout Assam, Burma, and other countries east of the Bay of Bengal to Borneo and Java. Probably it is more widely distributed in India, but its extraordinary resemblance to a King-Crow causes it to be overlooked.

Habits, &c. According to Legge, this is a tame, quiet bird, with a straight flight, and a remarkably human whistle of six ascending notes, as if some one were practising a musical scale. Its food consists of caterpillars and beetles with various seeds. It is supposed to deposit its eggs in the nests of *Dicruri*; and Davison has seen two King-Crows feeding a young *Surniculus*.

Genus **COCCYSTES**, Gloger, 1834.

Unlike any of the preceding genera of Cuckoos, the present is distinguished by possessing a pointed occipital crest of some length; the tail is much longer than the wing, and the tail-feathers graduated; the wing is short and rounded, the primaries only extend one-fourth to one-fifth the length of the closed wing beyond the secondaries; the tarsus is bare except at the base. Bill compressed, culmen much curved towards the tip. Sexes alike. No distinct plumage in the young.

The six species belonging to this genus range throughout Africa, Southern Europe, and Southern Asia. Two are Indian.

Key to the Species.

Upper parts entirely black .... *C. jacobinus*, p. 225.
A white collar; wings mostly chestnut .... *C. coromandus*, p. 226.

1118. **Coccystes jacobinus.** *The Pied Crested Cuckoo.*

Cuculus jacobinus, *Bodd. Tabl. Pl. Enl.* p. 53 (1783).
Cuculus melanoleucus, *Gm. Syst. Nat.* i, p. 416 (1788).
Oxylophus melanoleucus, *Blyth, Cat.* p. 74.
Coccystes melanoleucus, *Horsf. & M. Cat.* ii, p. 694; *Jerdon, B. I.* i, p. 339; *id. Ibis,* 1872, p. 15; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 23; *King, ibid.* p. 214; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 155; *Cordeaux, Ibis,* 1888, p. 224.
Coccystes jacobinus, *Holdsworth, P. Z. S.* 1872, p. 432; *Hume, S. F.* i, p. 173; xi, p. 76; *id. Cat.* no. 212; *Morgan, Ibis,* 1875, p. 315; *Blyth & Wald. Birds Burm.* p. 81; *Butler, S. F.* v, p. 327; vii, p. 181; *Davidson & Wenden, ibid.* p. 79; *Ball, ibid.* p. 207; *Cripps, ibid.* p. 265; *Legge, Birds Ceyl.* p. 246; *Biddulph, Ibis,* 1881, p. 50; *Davison, S. F.* x, p. 360; *Oates, B. B.* ii, p. 118; *id. in Hume's N. & E.* 2nd ed. ii, p. 388; *Barnes, Birds Bom.* p. 129; *Norman, Ibis,* 1888, p. 402; *Shelley, Cat. B. M.* xix, p. 217.

Pupiya, Chatak, H.: *Kola bulbul,* Beng.; *Gola kokila, Tangada gorankah,* Tel.

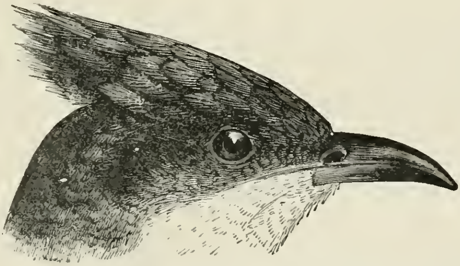

Fig. 64.—Head of *C. jacobinus*, ½.

Coloration. Upper plumage throughout and the sides of the head black glossed with green; quills dark brown, with a broad white band near the base across the inner webs of all except the three innermost, and across the outer webs of all primaries except the first; tail-feathers with white tips, very broad on the outer, narrow on the middle pair; lower parts white, sometimes grey-brown, the basal part of the feathers showing. Young birds are brown above, buff below, the chin and throat grey at first, wing-bar and spots at end of tail-feathers buff.

Bill black, irides red-brown; legs leaden blue (*Jerdon*).

Length 13; tail 6·8; wing 6; tarsus 1·1; bill from gape 1·2.

Distribution. Throughout India from the lower Himalayas, and in Ceylon, ranging from Sind, the Punjab, and Kashmir, to Assam, Cachar, Manipur, and Upper Burma, but not yet observed in Lower Pegu, nor east of the Irrawaddy valley. To the westward this Cuckoo is found almost throughout Africa south of the Sahara.

Habits, &c. Although there is no reason to suppose that this bird migrates at any time of the year out of India, it moves about a good deal at different seasons, and in some parts, as in Sind, Indore, parts of the Deccan, around Calcutta, at Faridpur in Eastern Bengal, and at Shillong in the Khasi hills, it is either met with only during the rains or more abundantly at that period. It feeds on insects, which it not unfrequently takes on the ground. The breeding-season is in July, August, and September, and at this time *C. jacobinus* is very noisy, frequently uttering its peculiar call, which Jerdon terms a "high-pitched wild metallic note." The female lays in the nest of various species of *Crateropus* and *Argya*; the eggs resemble those of the Babblers, being blue in colour and measuring about ·94 by ·73.

1119. **Coccystes coromandus.** *The Red-winged Crested Cuckoo.*

Cuculus coromandus, *Linn. Syst. Nat.* i, p. 171 (1766).

Oxylophus coromandus, *Jerdon, Madr. Jour. L. S.* xi, p. 222; *Blyth, J. A. S. B.* xi, p. 920; *id. Cat.* p. 74; *Layard, A. M. N. H.* (2) xiii, p. 451.

Coccystes coromandus, *Horsf. & M. Cat.* ii, p. 693; *Jerdon, B. I.* i, p. 341; *Holdsworth, P. Z. S.* 1872, p. 432; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 156; *Blyth & Wald. Birds Burm.* p. 81; *Hume, S. F.* iii, p. 82; xi, p. 76; *id. Cat.* no. 213; *Hume & Dav. S. F.* vi, p. 162; *Legge, Birds Ceyl.* p. 249; *Scully, S. F.* viii, p. 257; *Vidal, S. F.* ix, p. 55; *Oates, B. B.* ii, p. 117; *id. in Hume's N. & E.* 2nd ed. ii, p. 391; *Barnes, Birds Bom.* p. 130; *Norman, Ibis,* 1888, p. 400; *Shelley, Cat. B. M.* xix, p. 214.

Yerra gola kokila, Tel.; *Tseben,* Lepcha.

Coloration. Crown, nape, and sides of head black, the crest-feathers brightly glossed with bluish green; a white half-collar round the back of the neck; back, scapulars, lesser wing-coverts near the forearm, innermost greater coverts, and tertiaries black, richly glossed with green; remainder of wings, both coverts and quills, chestnut, tips of quills dusky; rump and upper tail-coverts black, with a bluish gloss; tail more purple, the outer feathers slightly tipped white; chin, throat, and fore-neck pale ferruginous; breast white, abdomen and flanks ashy brown, under tail-coverts black, with violet gloss like the tail.

The young has most of the feathers in the upper plumage tipped with pale rufous, the chin and throat white, under tail-coverts and edges of tail-feathers buff.

Bill black; mouth inside salmon-colour; iris pale reddish brown; eyelids plumbeous; legs plumbeous, claws horny.

Length about 18·5; tail 9·5; wing 6·4; tarsus 1·1; bill from gape 1·4.

Distribution. This is a very rare bird in India. Jerdon states that he saw it in Malabar and the Carnatic, and that it has been found in Central India (? Chutia Nagpur). There are skins in the Hume collection from Madras, Trichinopoly, and the Nilgiris. The only other recorded occurrence I can find is at Sáwant Wári, where Mr. Vidal obtained a specimen. The species appears to be rather more common in Ceylon. It is found at the base of the Himalayas in Nepal and farther east, in Assam, Eastern Bengal, Tipperah, the Gáro hills, and throughout Burma, being common in Pegu, and its range extends to the Malay Peninsula, Southern China, the Philippines, Borneo, and Celebes.

Habits, &c. In Ceylon this Cuckoo is migratory, according to Legge, arriving on the western coast (probably from India) about October, and leaving in April. Elsewhere it is believed to be resident. In Pegu, as observed by Oates, it is seen singly or in pairs in thick jungle, and is entirely arboreal, feeding on caterpillars. An egg obtained from the oviduct of a female in Tipperah was uniform greenish blue, and measured 1·05 by ·92. The eggs are probably deposited in nests of *Crateropus* or *Garrulax*, or their allies.

Subfamily PHŒNICOPHAINÆ.

The present subfamily contains a group of Cuckoos of very inferior powers of flight, and for the most part inhabitants of thick bush. Many of them feed on the ground, a few are frugivorous. Only one genus, *Eudynamis*, which is in other respects aberrant, has parasitic nesting-habits and lays coloured eggs; all the others make nests and hatch their eggs like other birds, and have white eggs.

The tarsus in this subfamily is always naked, the wing short and rounded, the tail generally long, well graduated, and broad. In many of the genera the plumage of the head and neck is spiny. The accessory femoro-caudal muscle is present, and the pectoral tract of feathers on each side divides, opposite the articulation of the humerus, into two branches, which terminate separately.

Key to the Genera.

a. Tail and wing subequal in length; head-feathers not spiny .... EUDYNAMIS, p. 228.
b. Tail much longer than wing; head-feathers spiny.
  a'. Claws of all toes similar.
    a''. Feathers of back and breast not spiny.

a^3. Bill red throughout; general colour above grey .... ZANCLOSTOMUS, p. 230.
b^3. Bill partly or wholly green.
  a^4. Culmen much curved throughout: sexes alike in plumage.
    a^5. Tail-feathers with white tips.
      a^6. Naked sides of face not united across forehead .... RHOPODYTES, p. 230.
      b^6. Naked sides of face united .. PHŒNICOPHAËS, p. 234.
    b^5. No white on tail-feathers...... RHAMPHOCOCCYX, [p. 235.
  b^4. Culmen almost straight except at tip: sexes dissimilar .... RHINORTHA, p. 236.
b''. Breast and back-feathers spiny, colour brownish .... TACCOCUA, p. 237.
b'. Claw of hallux much lengthened and nearly straight...................... CENTROPUS, p. 239.

Genus **EUDYNAMIS**, Vig. & Horsf., 1826.

Sexes dissimilar; the adult male being black, the adult female spotted or barred. The changes in the young are peculiar, the nestling, in the only species in which the various phases have been studied, having the coloration of the adult male, then changing into a garb resembling that of the female.

The bill is stout, the culmen rounded and much curved; the wing and tail subequal in length, the latter moderately graduated, the rectrices broad. No crest. Legs stout; tarsus strongly scutellate in front, only plumed at the extreme base.

The genus ranges throughout the Oriental region to New Guinea and Australia. About six species are known, only one of which inhabits India.

1120. **Eudynamis honorata.** *The Indian Koel.*

Cuculus honoratus, *Linn. Syst. Nat.* i, p. 169 (1766).
Cuculus orientalis, *apud Blyth, J. A. S. B.* xi, p. 913, *nec Linn.*
Eudynamis orientalis, *Jerdon, Madr. Jour. L. S.* xi, p. 222; *Pearson, J. A. S. B.* x, p. 657; *Blyth, J. A. S. B.* xii, p. 245; xvi, p. 468; *id. Cat.* p. 73; *Horsf. & M. Cat.* ii, p. 707; *Jerdon, B. I.* i, p. 342; *Blyth, Ibis*, 1866, p. 363; *A. Anderson, Ibis*, 1873, p. 74.
Eudynamis honorata, *Walden, Ibis*, 1869, p. 338; *Hume, N. & E.* p. 139; *id. S. F.* i, p. 173; *Adam, ibid.* p. 373; *A. Anderson, Ibis*, 1875, p. 142; *Hume, S. F.* iv, p. 463; *Butler, S. F.* vii, p. 182; *Ball, ibid.* p. 207; *Hume, Cat.* no. 214; *Scully, S. F.* viii, p. 257; *Legge, Birds Ceyl.* p. 251; *Reid, S. F.* x, p. 27; *Barnes, Birds Bom.* p. 130; *Oates in Hume's N. & E.* 2nd ed. ii, p. 392; *Shelley, Cat. B. M.* xix, p. 316.
Eudynamis malayana, *Cab. & Heine, Mus. Hein.* iv, p. 52 (1862); *Walden, Ibis*, 1869, p. 339; *Hume, S. F.* ii, p. 192; xi, p. 77; *id. Cat.* no. 214 bis; *Hume & Dav. S. F.* vi, p. 162; *Oates, B. B.* ii, p. 119; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 581; v, p. 569.
Eudynamis chinensis, *Cab. & Hein, l. c.* note; *Blyth, Birds Burm.* p. 81.

Koel, H.; *Kokil*, Beng.; *Kokila, Nallak* ♂, *Podak* ♀, Tel.; *Kusil, Koel*, Tamul (Ceylon); *Kaputa Koha* ♂, *Gomera Koha* ♀, Cing.; *Ou-au*, Burmese.

Coloration. Male black throughout with a bluish-green gloss.

Female. Above brown with an olive gloss; head and neck spotted with white all round, more closely below; back and wing-coverts also spotted; quills and tail-feathers barred with white; the spots of the fore-neck pass gradually into equal bars of white and glossy brown, which cover the breast and abdomen.

The nestling is black throughout at first, but it soon assumes a livery much like that of the adult female, but with the spots and bars rufous, the head with broad rufous shaft-stripes, the throat with broad whitish streaks, the breast with large white spots, and the abdomen with dark arrowhead marks. From this both sexes appear to pass into the adult plumage without moulting. Some young males are found almost without rufous spots or bars. Probably the changes that take place vary.

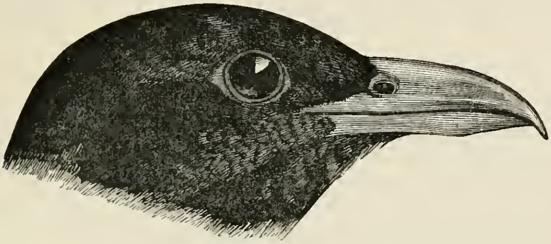

Fig. 65.—Head of *E. honorata*, ♂, $\frac{1}{1}$.

Bill dull green, dusky at the gape; iris bright crimson; legs plumbeous, claws dark horny.

Length about 17; tail 7 to 8·5; wing 7 to 8·25; tarsus 1·3; bill from gape 1·6.

Distribution. Throughout India, Ceylon, and Burma, except on the Himalayas above the tropical zone. This bird is rare in Sind and the Punjab, and not known to occur farther west; to the eastward its range extends to China, and to the south-east throughout the Malay Archipelago to Flores. Mr. Hume found it in the Laccadive Islands, and it is common on the Andamans and Nicobars. The race from the countries east of the Bay of Bengal has been distinguished as *E. malayana* on account of rather larger size and a little stronger bill, the female, too, is said to be more rufous, but the differences are neither well marked nor constant.

Habits, &c. The Koel is one of the familiar Indian birds, well known to every resident in the country. In the breeding-season, from March or April till July, its cry of *ku-il, ku-il,* repeated several times, increasing in intensity and ascending in the scale, is to be heard in almost every grove. It has another call, like *ho-y-o*, uttered by the male alone. This Cuckoo keeps much to groves of trees in cultivated tracts, and is rare in large forests. In Pegu and Tenasserim, according to Oates and Davison, it makes its appearance in February and disappears about July, but it probably does not migrate to any great distance, and in India generally it is a resident. It feeds entirely on fruit. It lays in May and June in the nests of Crows, generally *Corvus splendens*, less frequently in those of *C. macrorhynchus*, and not unfrequently two or more Koel's eggs may be found in the same nest. The eggs much resemble those of Crows, but are smaller; they are dark green, blotched and spotted with reddish brown, and measure about 1·19 by ·92. The Crows bring up the Koel, which at times, at all events, ejects the young Crows, after they are hatched. Koels are often kept caged by natives of India, who admire the bird's rich melodious call-notes.

Genus **ZANCLOSTOMUS**, Swainson, 1837.

Bill compressed, moderately deep; culmen much curved, red in colour; nostril elongate, longitudinal, a small naked space round the orbit. Feathers of forehead and throat spiny. Wing short, rounded, primaries scarcely longer than secondaries; tail very long, greatly graduated, the outer tail-feathers half or less than half the length of the median pair. Tarsus naked.

Only one species is included in this genus.

1121. **Zanclostomus javanicus.** *The Lesser Red-billed Malkoha.*

Phœnicophaus javanicus, *Horsf. Trans. Linn. Soc.* xiii, p. 178 (1821).
Zanclostomus javanicus, *Swains. Class. Birds*, ii, p. 323; *Blyth, J. A. S. B.* xi, p. 1097; *id. Cat.* p. 76; *Horsf. & M. Cat.* ii, p. 688; *Blyth, Birds Burm.* p. 81; *Hume & Dav. S. F.* vi, pp. 167, 506; *Hume, Cat.* no. 216 quint.; *Oates, B. B.* ii, p. 125; *Shelley, Cat. B. M.* xix, p. 380.

Coloration. Upper parts, except the tail, ashy grey, strongly glossed with green on the wings, rump, and upper tail-coverts; quills brownish grey; tail blackish, glossed with purple, varying to green, the rectrices tipped white; chin, lores, cheeks, throat, and fore-neck pale ochraceous; breast grey washed with rufous; abdomen rusty red.

Bill in adults coral-red; irides brown, naked space round eye blue; legs and feet dark plumbeous.

Length about 17; tail 10·75; wing 5·5; tarsus 1·4; bill from gape 1·6.

Distribution. Java, Sumatra, Borneo, and the Malayan Peninsula, extending into Tenasserim as far north as Tavoy, but very rare.

Genus **RHOPODYTES**, Cab. & Heine, 1862.

Bill deeper than in *Zanclostomus* and of a pale green colour; nostril small, rounded or oval and oblique; a large naked space round the orbit, separated from the bill by a narrow band of feathers. No eyelashes. Otherwise as in *Zanclostomus*, from which *Rhopodytes* is doubtfully separable.

This genus ranges almost throughout the Oriental region, and four species occur within our area.

Key to the Species.

a. Abdomen grey or blackish.	
a'. Orbital skin blue: length about 15·5 ..	*R. viridirostris*, p. 231.
b'. Orbital skin red.	
a''. Length about 23	*R. tristis*, p. 232.
b''. Length about 15 to 16	*R. diardi*, p. 233.
b. Abdomen ferruginous red	*R. sumatranus*, p. 233.

1122. **Rhopodytes viridirostris.** *The Small Green-billed Malkoha.*

Zanclostomus viridirostris, *Jerdon, Madr. Jour. L. S.* xi, p. 223 (1840); *id. Ill. Ind. Orn.* pl. 3; *id. B. I.* i, p. 346; *Blyth, Cat.* p. 76; *Horsf. & M. Cat.* ii, p. 690; *Layard, A. M. N. H.* (2) xiii, p. 453; *Holdsworth, P. Z. S.* 1872, p. 432; *Legge, Birds Ceyl.* p. 258.

Phœnicophæus jerdoni, *Blyth, J. A. S. B.* xi, p. 1095 (1842).

Rhopodytes viridirostris, *Cab. & Heine, Mus. Hein.* iv, p. 63; *Dav. & Wend. S. F.* vii, p. 79; *Ball, ibid.* p. 207; *Hume, Cat.* no. 216; *Vidal, S. F.* ix, p. 55; *Butler, ibid.* p. 389; *Davison, S. F.* x, p. 360; *Barnes, Birds Bom.* p. 131; *Oates in Hume's N. & E.* 2nd ed. ii, p. 399; *Shelley, Cat. B. M.* xix, p. 385.

Kappra Popya, H.; *Wamana Kaki*, Tel.; *Kusil*, Tam. (Ceylon); *Mal-kændetta*, Cing.

Feathers of throat and fore-neck bifurcate, there being no web to the terminal portion of the shaft, and the plumage of those parts looking as if wet or partially stuck together.

Coloration. Upper parts dark ashy with a green gloss, which becomes much stronger and metallic on the wings and tail; the remiges and rectrices glossy above and below, and the latter broadly tipped with white; underparts pale ashy, throat and fore-neck streaked, owing to the structure of the feathers; breast whitish, more or less tinged with rufous.

Bill bright apple-green; naked skin around eyes cobalt-blue; irides blood-red; legs blackish green (*Jerdon*).

Length about 15·5; tail 8·75 to 10; wing 5·1 to 5·4; tarsus 1·35; bill from gape 1·4.

Distribution. The Peninsula of India as far north as Ratnágiri and Belgaum to the westward, Sironcha on the Godávari, Cuttack, and, according to Ball, Midnapore to the eastward; also Ceylon in the low country. This Cuckoo does not ascend the hills.

Habits, &c. A haunter of bamboo- and bush-jungle, often found in hedges and other thickets about cultivation. This bird lives, according to Jerdon, on various large insects—grasshoppers, mantides, caterpillars, &c. In Ceylon, according to more than one observer, it feeds chiefly on fruit. Like its allies, it has a very weak flight. The nest has been taken on the 10th March by Mr. Cardew in North Arcot, and by Mr. H. Wenden in July at

Nulwar Station (G. I. P. Ry.), and is cup-shaped, roughly constructed of twigs and lined with green leaves. It contained in each case two chalky white eggs, measuring about 1·12 by ·87.

1123. **Rhopodytes tristis.** *The Large Green-billed Malkoha.*

Melias tristis, *Less. Traité d'Ornith.* p. 132 (1831); *id. Voy. Bélanger, Zool.* p. 231, *Ois.* pl. i.

Phœnicophæus longicaudatus, *Blyth, J. A. S. B.* x, p. 923 (1841); xi, p. 1095; xii, p. 246.

Zanclostomus tristis, *Blyth, Cat.* p. 76; *Horsf. & M. Cat.* ii, p. 691; *Jerdon, B. I.* i, p. 345; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 98; *Blyth & Wald. Birds Burm.* p. 81.

Rhopodytes tristis, *Cab. & Heine, Mus. Hein.* iv, p. 64; *Oates & Hume, S. F.* v, p. 144; *Hume & Dav. S. F.* vi, p. 162; *Ball, S. F.* vii, p. 207; *Hume, Cat.* no. 215; *id. S. F.* xi, p. 77; *Scully, S. F.* viii, p. 258; *Bingham, S. F.* ix, p. 168; *Oates, B. B.* ii, p. 121; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 582; v, p. 569; vii, p. 381; *Oates in Hume's N. & E.* 2nd ed. ii, p. 397; *Shelley, Cat. B. M.* xix, p. 386.

Ban-kokil, Beng.; *Sanku,* Lepcha; *Bamura,* Assam; *Wapalai,* Burmese.

Coloration. Some black bristles scattered over the forehead and chin and around the gape; lores black, a band above the lores and naked orbital area black and white mixed; head and neck above ashy grey, with a greenish wash, which passes on the back into glossy green; wings and tail black, richly glossed with green both above and below; some blue gloss on the quills; tail-feathers broadly tipped with white; chin and cheeks whitish, feathers black-shafted, passing into colour of throat, which is pale brownish ashy, becoming darker on the breast and passing into dark ashy on the abdomen.

Bill pale green, tinged at gape and about base with red; irides brown or reddish brown; orbital skin dull dark to bright crimson; legs and feet dark greenish plumbeous (*Davison*).

Length about 23; tail about 15; wing 6·5; tarsus 1·6; bill from gape 1·6.

Distribution. The outer Himalayas below about 8000 ft. elevation as far west as Kumaun; also Bengal and, according to Jerdon, Chutia Nagpur and the Northern Circars (this needs confirmation); common in Assam, the hill-tracts to the southward, throughout Burma, except to the extreme south of Tenasserim, and in Siam, Cambodia, and Cochin China.

Habits, &c. This bird, like others of the genus, keeps singly or in pairs to thick scrub, and is but rarely seen on the wing; its flight is slow and heavy, and when flushed it escapes into bush or forest as quickly as it can, and makes its way with great rapidity through dense cover. It feeds on the ground upon insects of all kinds. It has a low clucking note, called by Davison a cat-like chuckle. It breeds in Sikhim about May, in Burma from March till

July; the nest is a loose platform of twigs, with two or three white chalky eggs, measuring about 1·46 to 1·05.

1124. **Rhopodytes diardi.** *Diard's Green-billed Malkoha.*

Melias diardi, *Lesson, Traité d'Ornith.* p. 132 (1831).
Phœnicophæus tristis, *apud Blyth, J. A. S. B.* xi, p. 928; xii, p. 246.
Zanclostomus diardi, *Blyth, Cat.* p. 76; *Horsf. & M. Cat.* ii, p. 690; *Blyth, Birds Burm.* p. 81.
Rhopodytes diardi, *Cab. & Heine, Mus. Hein.* iv, p. 61; *Sharpe, P. Z. S.* 1873, p. 604, fig. 9; *Hume & Dav. S. F.* vi, p. 163; *Hume, Cat.* no. 215 bis; *Oates, B. B.* ii, p. 122; *Shelley, Cat. B. M.* xix, p. 390.

Coloration. Almost the same as that of *R. tristis.* The narrow line of feathers on the lores black; head and neck dark ashy grey; lower hind-neck, back, rump, wings, and tail, the latter two both above and below, rich glossy metallic green, passing into blue; all the tail-feathers tipped with white, less broadly than in *R. tristis.* Lower parts ashy, chin whitish, the rest dark, becoming blackish on the abdomen.

Bill pale green; irides dark brown; bare orbital space crimson; edges of eyelids black; legs and feet dark plumbeous green (*Davison*).

Length about 15; tail 9; wing 5; tarsus 1·25; bill from gape 1·4.

Distribution. From the neighbourhood of Mergui throughout Southern Tenasserim and the Malay Peninsula to Sumatra.

Habits, &c. Similar to those of *R. tristis*, which this species replaces south of Mergui.

1125. **Rhopodytes sumatranus.** *The Sumatran Green-billed Malkoha.*

Cuculus sumatranus, *Raffl. Trans. Linn. Soc.* xiii, p. 287 (1822).
Zanclostomus sumatranus, *Blyth, Cat.* p. 76; *Horsf. & M. Cat.* ii, p. 689.
Rhopodytes sumatranus, *Cab. & Heine, Mus. Hein.* iv, p. 62; *Hume & Dav. S. F.* vi, p. 164; *Hume, Cat.* no. 215 ter; *Shelley, Cat. B. M.* xix, p. 391.
Poliococcyx sumatranus, *Sharpe, P. Z. S.* 1873, p. 606, fig. 14; *Oates, B. B.* ii, p. 123.

Nostrils long, oblique.

Coloration. Narrow band of feathers on lores black, a few white feathers sometimes, not always, present above the bare orbital area; head above dark ashy grey, passing on the neck into metallic green, which covers the remainder of the upper surface; quills and outer tail-feathers steel-blue above and below; all the tail-feathers with moderate white tips. Chin and throat ashy; breast darker, with a wash of glossy green; abdomen and lower tail-coverts deep bay. Shafts of head- and neck-feathers black, but not conspicuous.

Bill pale green; irides pale blue; bare orbital space orange, palest round the eye, shading to blood-red at the posterior angle; legs and feet plumbeous green (*Davison*).

Length about 16; tail 9·5; wing 5·5; tarsus 1·4; bill from gape 1·5.

Distribution. Tenasserim, south of Mergui (common on the island of Mergui), the Malay Peninsula, Java, Sumatra, and Borneo.

Genus **PHŒNICOPHAËS**, Vieillot, 1816.

Bill stout, wide at the base, compressed in front; culmen curved throughout, upper mandible very high; nostril a narrow longitudinal slit, parallel to the commissure and close to it. Sides of the head naked and papillose, the bare skin extending across the forehead all round the base of the upper mandible; no eyelashes. Tail long, broad, and graduated; wing rounded. Feathers of crown and throat with stiff projecting shafts. Sexes only differing in the colour of the iris.

A single species.

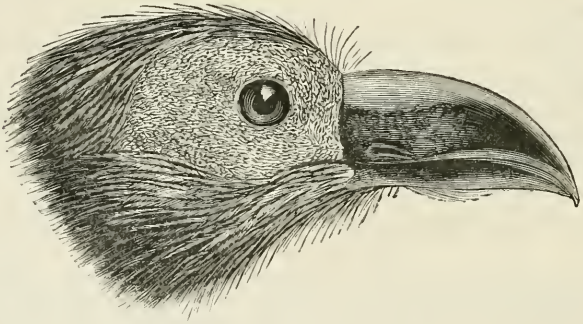

Fig. 66.—Head of *P. pyrrhocephalus*, 1/1.

1126. **Phœnicophaës pyrrhocephalus.** *The Red-faced Malkoha.*

Cuculus pyrrhocephalus, *Forster, Ind. Zool.* p. 16, pl. vi (1781).

Phœnicophæus pyrrhocephalus, *Blyth, J. A. S. B.* xi, p. 927; *id. Cat.* p. 75; *Layard, A. M. N. H.* (2) xiii, p. 453; *Holdsworth, P. Z. S.* 1872, p. 433; *Legge, S. F.* i, p. 346.

Phœnicophaës pyrrhocephalus, *Walden, Tr. Z. S.* viii, p. 52, fig. 8; *Sharpe, P. Z. S.* 1873, p. 605, fig. 11; *Hume, Cat.* no. 216 bis; *Legge, Birds Ceyl.* p. 255, pl. xii; *Parker, Ibis*, 1886, p. 184; *Shelley, Cat. B. M.* xix, p. 395.

Mal-kœndetta, Warreliya, Cingalese. (The first-named appears to have been the origin of the term *Malkoha*, quoted by Forster, and applied to several Ground-Cuckoos by European ornithologists.)

Coloration. Crown, hind neck, and sides of neck black, with a greenish gloss, narrowly streaked with white; rest of upper parts metallic bluish green; quills more blue; tail-feathers with long white tips, longest on the outer rectrices; chin and cheeks white with black shaft-marks; throat and fore-neck glossy black; rest of lower parts white.

Bill apple-green; irides brown in males, white in females; whole sides of face crimson; legs and feet bluish slate (*Legge*).

Length about 18; tail 11; wing 6·25; tarsus 1·4; bill from gape 1·6.

Distribution. Peculiar to Ceylon, found in the forests of the lower tracts almost throughout the island.

Habits, &c. According to Legge this is a shy bird, generally keeping to forests with much undergrowth. It is often seen in small flocks. As a rule it is silent, but at times utters a low monosyllabic call when flying about. It lives chiefly on fruit, but occasionally eats small insects, and its flesh is said to be well-flavoured.

Genus **RHAMPHOCOCCYX**, Cabanis, 1862.

Bill similar to that of *Phœnicophaës*, the nostrils at the base varying in form. A large naked area round the eye, extending to the base of the bill, but not across the forehead; small eyelashes present. No white on the plumage. Otherwise this genus closely resembles *Phœnicophaës*.

I do not regard *Rhinococcyx*, *Dryococcyx*, and *Urococcyx* as generically distinct] from *Rhamphococcyx*, the differences in the shape of the nostrils, on which these genera were founded, not being by themselves of sufficient importance. The genus *Rhamphococcyx*, as here understood, comprises five known species, and ranges from Tenasserim to Celebes. One species only occurs in Burma.

1127. **Rhamphococcyx erythrognathus.**

Phœnicophaës erythrognathus, *Hartlaub, Syst. Verz. Mus. Brem.* p. 95 (1844); *Walden, Tr. Z. S.* viii, p. 53, fig. 7; *Blyth, Birds Burm.* p. 81; *Hume & Dav. S. F.* vi, pp. 165, 506.

Phœnicophaus curvirostris, *apud Blyth, Cat.* p. 75; *id. J. A. S. B.* xxiv, p. 278; *Horsf. & M. Cat.* ii, p. 687; *nec* Cuculus curvirostris, *Shaw.*

Rhamphococcyx erythrognathus, *Cab. & Heine, Mus. Hein.* iv, p. 67; *Hume, Cat.* no. 216 ter; *Oates, B. B.* ii. p. 124.

Urococcyx erythrognathus, *Shelley, Cat. B. M.* xix, p. 398.

Coloration. Upper parts metallic green; head greyer and less glossy; quills bluish green above, purple beneath; terminal 3 or 4 inches of each tail-feather almost always dark chestnut (very rarely green); in some specimens there is a narrow white superciliary line above the naked orbital area; chin and cheeks ashy grey (whitish in some individuals); throat, breast, and lower tail-coverts dull chestnut; abdomen darker and duller; flanks and thigh-coverts blackish with a green gloss.

Bill pale green; both mandibles maroon-red near the base; irides blue in the male, yellow in the female; legs and feet dark plumbeous.

Length about 18·5; tail 11; wing 6·75; tarsus 1·6; bill from gape 1·9.

Distribution. The Malayan Peninsula, Sumatra, and Borneo, ranging into Southern Tenasserim as far north as Yay.

Habits, &c. According to Tickell and Davison, very similar to those of its allies. Tickell observed that this species fed on "Coleoptera, Hemiptera, and very large caterpillars."

Genus **RHINORTHA**, Vigors, 1830.

Bill longer than in the preceding genera and compressed, the culmen almost straight till near the tip; nostril oval, longitudinal; naked area around the eye not separated from the bill by feathers on the lores. Wings and tail as in *Zanclostomus*. Feathers of head spiny. Sexes different.

A single species.

1128. **Rhinortha chlorophæa.** *Raffles's Green-billed Malkoha.*

Cuculus chlorophæus, *Raffl. Trans. Linn. Soc.* xiii, p. 288 (1822).
Rhinortha chlorophæa, *Vig. App. Mem. Raffl.* p. 671; *Blyth, J. A. S. B.* xi, p. 924; xii, p. 246; xiv, p. 199; xvi, p. 468; *id. Cat.* p. 76; *Horsf. & M. Cat.* ii, p. 692; *Sharpe, P. Z. S.* 1873, p. 603, fig. 8; *Walden, in Blyth's Birds Burm.* p. 82; *Hume & Dav. S. F.* vi, p. 166; *Hume, Cat.* no. 216 quat.; *Oates, B. B.* ii, p. 120; *Shelley, Cat. B. M.* xix, p. 393.

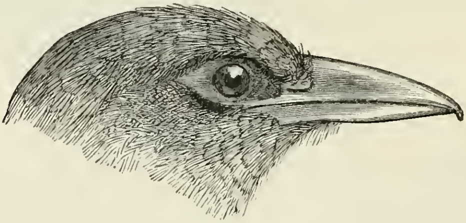

Fig. 67.—Head of *R. chlorophæa*, $\frac{1}{1}$.

Coloration. Male. Head and neck above chestnut, back and wings rather darker, quills broadly tipped dusky; rump and upper tail-coverts and tail dull black, with narrow grey cross-bars, not quite so close together on the tail; all tail-feathers broadly tipped white, the pale bars wanting near the white tip; chin, throat, and sides of head and neck pale chestnut, growing paler on the breast and then passing into dull brown with close faint cross-bars on the abdomen, flanks, and lower tail-coverts.

Female. Head and neck above and on the sides ashy grey; back, rump, wings, and tail deep chestnut, the quills with dusky tips, the tail-feathers tipped with white and with a subterminal black band; lower parts to the breast pale grey, sometimes washed with buff, becoming more rufous on the breast and abdomen; flanks and lower tail-coverts chestnut.

Bill apple-green; orbital skin pale green, inclining to bluish; irides dark brown; legs and feet dark plumbeous (*Davison*).

Length about 13; tail 7; wing 4·5; tarsus 1·05; bill from gape 1·4.

Distribution. In Tenasserim as far north as Lemyne, a little north of Yay, also throughout the Malay Peninsula, Sumatra, and Borneo.

Habits, &c. According to Davison, this Ground-Cuckoo frequents the densest parts of evergreen forests and cane-brakes. In all its habits it resembles *Rhopodytes*, but has a different note, a peculiar cat-like mew, not a chuckle. It is almost invariably found in pairs and feeds on insects.

Genus **TACCOCUA**, Lesson, 1831.

Bill shorter and deeper than in *Zanclostomus* and *Rhopodytes*; upper mandible distinctly festooned near the base. Wings short and rounded; tail long, broad, and graduated, upper tail-coverts more than half as long as the tail. The plumage of the head, neck, upper back, and breast spinous, shafts of the frontal feathers projecting. A row of coarse bristles nearly surrounds the eye except behind. Tarsus strong. Claws short and curved. Plumage above grey.

A single species, peculiar to India and Ceylon.

1129. **Taccocua leschenaulti.** *The Sirkeer Cuckoo.*

Taccocua leschenaultii, *Less. Traité*, p. 144 (1831); *Blyth, J. A. S. B.* xiv, p. 201; *id. Cat.* p. 77; *Jerdon, B. I.* i, p. 352; *Holdsworth, P. Z. S.* 1872, p. 433; *Hume & Butler, S. F.* iii, p. 461; v. p. 218; *Hume, Cat.* no. 219; *Legge, Birds Ceyl.* p. 266; *Vidal, S. F.* ix, p. 56; *Butler, ibid.* p. 389; *Davison, S. F.* x, p. 361; *Barnes, Birds Bom.* p. 134; *Oates in Hume's N. & E.* 2nd ed. ii, p. 408.

Centropus sirkee, *Gray in Hardw. Ill. Ind. Zool.* i, pl. 28 (1830–32).

Taccocua infuscata, *Blyth, J. A. S. B.* xiv, p. 201 (1845); *id. Cat.* p. 77; *Horsf. & M. Cat.* ii, p. 687; *Jerdon, B. I.* i, p. 353; *Hume, Cat.* no. 221; *Scully, S. F.* viii, p. 258.

Taccocua sirkee, *Blyth, J. A. S. B.* xiv, p. 201; *id. Cat.* p. 77; *Horsf. & M. Cat.* ii, p. 687; *Jerdon, B. I.* i, p. 353; *id. Ibis*, 1872, p. 16; *McMaster, J. A. S. B.* xl, pt. 2, p. 209; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 234; *Hume, Cat.* no. 220; *Marshall, Ibis*, 1884, p. 411; *Oates in Hume's N. & E.* 2nd ed. ii, p. 408; *Shelley, Cat. B. M.* xix, p. 381.

Taccocua affinis, *Blyth, J. A. S. B.* xv, p. 19 (1846); *id. Cat.* p. 77; *Jerdon, B. I.* i, p. 354; *King, J. A. S. B.* xxxviii, pt. 2, p. 214; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 168; *id. S. F.* v, p. 245; *Fairbank, S. F.* iv, p. 255; *Ball, S. F.* vii, p. 208; *Hume, Cat.* no. 222.

The Southern, Bengal, Northern, and Central Indian Sirkeers, Jerdon; *Jangli tota,* H.; *Adavi chilluka, Potu chilluka,* Tel.

Coloration. Upper parts light earthy brown, varying in tint from olive-grey to pale sandy or yellowish brown, always with more or less of a green satiny gloss on the wings and middle tail-feathers, and generally with some on the upper surface throughout; quills hair-brown; all tail-feathers except the middle pair black with broad white tips, middle tail-feathers narrowly and subobsoletely banded; chin and throat pale buff, fore-neck and upper breast varying from greyish brown more or less tinged with rufous to buff like the throat; lower breast and abdomen, with the wing-lining, rufous, varying in depth of tint; shafts of head, neck, back, and upper breast-feathers shining black.

Bill cherry-red, yellowish at the tip; irides reddish brown; feet plumbeous (*Jerdon*).

Length 16·5 to 17·5; tail 8·5 to 10; wing 5 to 6·5; tarsus 1·7; bill from gape 1·4.

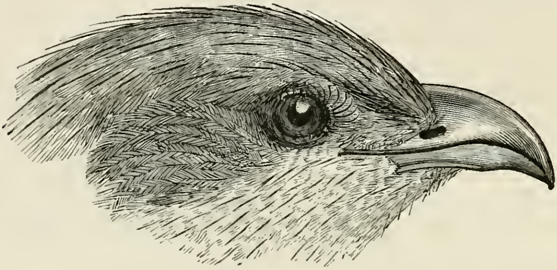

Fig. 68.—Head of *T. leschenaulti*, $\frac{1}{1}$.

Distribution. The Peninsula of India and Ceylon. This species inhabits the lower Himalayas from the Bhután Duars to Chamba, and is found, though very rarely, in Sind and the Punjab on the west, and throughout Bengal on the east, but not beyond; it is generally distributed in the peninsula, but is not common; and in Ceylon it is rare and local; it ascends the hills in Southern India to 5000 or 6000 feet and those of Ceylon to about 4000.

As with many other Indian birds there are three fairly marked races: (1) a large dark-coloured form (*T. infuscata*) inhabits the base of the Himalayas; (2) a paler race, not quite so large (*T. sirki*), is found in Upper India, the N.W. Provinces, Punjab, &c.; whilst (3) the birds of Southern India and Ceylon are smaller and darker (*T. leschenaulti*). Skins from Bengal and the Central Provinces (*T. affinis*) are intermediate in character. Hume has shown that of the four supposed species of Blyth and Jerdon only two can be distinguished at all, and these pass into each other, and Shelley has, I think, rightly united the whole. The English name "Sirkeer" was used by Latham, Hist. Birds, iii, p. 267. The origin of the term, a supposed Indian name "Surkool" or "Sircea," has not been traced. As it is impossible to say which of the specific names *sirkee* and *leschenaulti* was first published, I give the preference to the less barbarous of the two.

Habits, &c. This, like its allies, is a Ground-Cuckoo, found chiefly in thickets or long grass, very shy and rarely seen. It feeds on the ground, chiefly on grasshoppers and other insects, such as beetles and termites, occasionally on lizards. Its flight is very feeble. It breeds in Northern India from May to August, but on the Nilgiris and Malabar coast in March and April, and makes a loose cup-shaped nest of twigs lined with green leaves, in which are laid usually three chalky white eggs, measuring about 1·39 by 1·07.

Genus **CENTROPUS**, Illiger, 1811.

This genus is distinguished from all other members of the family by having on the hallux a long nearly straight hind claw, very much like a Lark's. The other claws are but little curved. The tarsus is strong and naked. The bill is deep, moderately large, with the culmen much curved; the nostrils are partly covered by a membrane. There is a row of bristles above the eye. The wing is short and rounded, the primaries scarcely exceeding the secondaries in length; the tail is graduated, long and broad. The feathers of the head, neck, and breast are harsh and spinous. Sexes alike.

About 30 species, of which 4 occur within our area, are comprised in *Centropus*, which ranges almost throughout the Ethiopian and Oriental regions, Papua and Australia.

Key to the Species.

a. Under wing-coverts black or grey or mottled.	
a′. Head and body black.	
a″. Bill black	*C. sinensis*, p. 239.
b″. Bill green or yellow	*C. chlororhynchus*, p. 242.
b′. Head and body brown or buff	*C. andamanensis*, p. 242.
b. Under wing-coverts chestnut	*C. bengalensis*, p. 243.

1130. **Centropus sinensis.** *The Common Coucal* or *Crow-Pheasant.*

Pelophilus sinensis, *Steph. Gen. Zool.* ix, p. 51 (1815).
Centropus bubutus, *Horsfield, Trans. Linn. Soc.* xiii, p. 180 (1821).
Centropus castanopterus, *Stephens, Gen. Zool.* xiv, p. 215 (1826).
Centropus philippensis, *apud Blyth, J. A. S. B.* xi, p. 1099; xii, p. 246; xiv, p. 202; *id. Cat.* p. 78; *Layard, A. M. N. H.* (2) xiii, p. 450, *nec Cuvier.*
Centropus sinensis, *Blyth, J. A. S. B.* xii, p. 247; xiv, p. 202; *id. Cat. Add.* p. xix; *Shelley, Cat. B. M.* xix, p. 343.
Centropus rufipennis, *apud Blyth, Cat.* p. 321; *Horsf. & M. Cat.* ii, p. 681; *Jerdon, B. I.* i, p. 348; *id. Ibis,* 1872, p. 15; *Hume, S. F.* i, p. 173; *Blyth & Wald. Birds Burm.* p. 81; *Legge, Birds Ceyl.* p. 260; *Marshall, Ibis,* 1884, p. 411; *Barnes, Birds Bom.* p. 132; *Oates in Hume's N. & E.* 2nd ed. ii, p. 400; *nec Illiger.*

Centrococcyx rufipennis, *Cab. & Heine, Mus. Hein.* iv, p. 115; *Ball, S. F.* vii, p. 207; *Hume, Cat.* no. 217; *Oates in Hume's N. & E.* 2nd ed. ii, p. 400.
Centropus eurycercus, *apud Hume, S. F.* ii, p. 196; *nec Hay.*
Centrococcyx eurycercus, *apud Hume & Oates, S. F.* iii, p. 83.
Centrococcyx intermedius, *Hume, S. F.* i, p. 454; xi, p. 77; *id. Cat.* no. 217 quat.; *Hume & Dav. S. F.* vi, p. 168; *Oates, B. B.* ii, p. 126; *id. in Hume's N. & E.* 2nd ed. ii, p. 404.
Centrococcyx maximus, *Hume, S. F.* i, p. 454; *id. Cat.* no. 217 quint.; *Oates in Hume's N. & E.* 2nd ed. ii, p. 405.

Mahoka, H.; *Kuka*, Beng.; *Jemudu-kaki*, Tel.; *Kalli-kaka*, Tam.; *Chembigum*, Tam. Ceylon; *Ætti-kukkula*, Cing.; *Bote*, Burmese; *Crow-Pheasant* of Europeans in India.

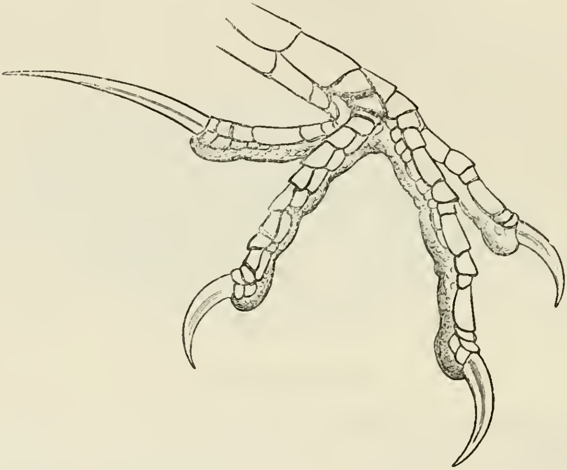

Fig. 69.—Foot of *C. sinensis*, $\frac{1}{1}$.

Coloration. Whole plumage, except the wings, black with a green gloss, varying to steel-blue and purple, especially on the upper back; the tail generally dull green; shafts of the feathers on the head, neck, and breast shining black; wings with their coverts and scapulars chestnut, tips of quills dusky; wing-lining black.

In the young there is much variation; the upper parts are black with rufous or white bars and spots; the wings and coverts are barred chestnut and black; tail dark brown, with narrow wavy whitish bars; lower parts dull black, with greyish-white bars. The change to the adult plumage is gradual.

Bill black; iris crimson; legs black (*Jerdon*).

Length about 19; tail 9 to 11; wing 7 to 9·4; tarsus 2; bill from gape 1·8. Females are larger than males.

Distribution. Throughout India, Ceylon, and Burma, with the exception of the Himalayas, in which this species is rare and confined to low elevations; also China, Siam, and the Malay Peninsula and islands.

Hume, who has been followed by several writers, has divided the Indian Coucals into three species thus distinguished:—

Interscapulars black; wing 7 to 8.	1. *C. rufipennis*: Indian Peninsula and Ceylon.
Interscapulars chestnut.	
Wing 7·3 to 8·25	2. *C. intermedius*: Eastern Bengal Assam, Burma, &c.
Wing 9 to 9·5	3. *C. maximus*: Sind and Northern India.

And unquestionably these are three well-marked races. The differences between *C. intermedius* and *C. maximus* are, however, not so clear as was at first supposed. I find Delhi and Sikhim male specimens, referred to the latter by Hume, with wings of 8·3, whilst wings of Tenasserim males measure 7·75; and as Manipur birds are intermediate in size, I regard this as one of the numerous instances in which there is a diminution of size to the southward. The distinction of the Peninsular and Ceylonese form I should accept, but that several South Indian and Ceylonese specimens in the British Museum have the interscapulary area chestnut as in Burmese birds. I therefore agree with Shelley in uniting all these races. I should add that the form called *C. intermedius* by Hume is identical with the Chinese bird *C. sinensis*, and that the name *C. rufipennis*, Illiger, does not belong to this species, but to the Philippine *C. viridis*: those who require a distinct term for the Indian Peninsular bird should call it *C. castanopterus*. *C. eurycercus*, with a broad blue tail, 12–13 inches long, from the Malay Peninsula and Sumatra, appears to me distinct from *C. sinensis*, though Shelley has united them.

Habits, &c. This is one of the common birds of India. It is found in cultivated ground, waste land, or bush-jungle, less commonly in forest; it is frequently seen in bushes on the banks of stream-beds and in hedge-rows. Its flight is slow and laboured. It feeds on the ground on insects, and occasionally on lizards and small snakes. It may often be seen walking on the ground, and both on the ground and on trees it has a trick of raising its large tail over its back. It has a peculiar sonorous call like *hoop*, *hoop*, *hoop*, repeated slowly several times. It breeds chiefly in June, July, and August, earlier in Southern India, and makes a huge globular nest of twigs, green and dry leaves, and coarse grass, generally, but not invariably, with a lateral entrance, and placed in a thick and often thorny bush or tree. The eggs are broad regular ovals, white and covered with a chalky layer; they are usually three in number, and measure about 1·44 by 1·16.

Coucals are regarded as a great delicacy by Indian Mahomedans and by some Hindoo castes.

1131. **Centropus chlororhynchus.** *The Ceylonese Coucal.*

Centropus chlororhynchus, *Blyth, J. A. S. B.* xviii, p. 805 (1849) *id. Cat.* p. 78; *id. Ibis,* 1867, p. 298; *Layard, A. M. N. H.* (2) xiii, p. 450; *Holdsworth, P. Z. S.* 1872, p. 433; *Legge, Birds Ceyl.* p. 263, pl. xiii; *Shelley, Cat. B. M.* xix, p. 342.
Centrococcyx chlororhynchus, *Hume, S. F.* vii, p. 372; *id. Cat.* no. 217 ter.

Ætti-kukkula, Cingalese.

Coloration. Head, body, and tail black, glossed with purple, passing on the neck, upper back, and breast into coppery bronze; wings, coverts, scapulars, and interscapulars deep bay, tips of quills dusky; wing-lining blackish. The young does not differ in colour.

Bill pale apple-green; inside of mouth black; iris deep red or dull crimson; legs and feet black; claws dusky (*Legge*).

Length about 17; tail 9·5; wing 6·4; tarsus 1·9; bill from gape 1·7.

Distribution. Throughout the forests of the South-west hill region of Ceylon.

Habits, &c. Very similar to those of *C. sinensis*, but this species appears, from Captain Legge's account, to frequent thicker and damper forest and to have a rather different note. The call of the male is a sonorous long-drawn *hoo-whoop, whoop,* which can be heard with distinctness for many miles around, and by which the presence of the bird is easily detected. There is also a peculiar monosyllabic sound made by both sexes. The breeding-season is from about April or May till July.

1132. **Centropus andamanensis.** *The Andaman Coucal.*

Centropus andamanensis, *Tytler, Beavan, Ibis,* 1867, p. 321; *Ball, S. F.* i, p. 64; *Hume, S. F.* ii, p. 194.
Centrococcyx andamanensis, *Walden, Ibis,* 1873, p. 305, pl. xi; *Hume, Cat.* no. 217 bis; *Oates in Hume's N. & E.* 2nd ed. ii, p. 404.

Coloration. When freshly moulted, the head and neck, upper back, rump and lower parts throughout, including the under wing-coverts, are greyish brown; wings, scapulars, and a narrow band across the back between them deep bay; tips of quills infuscated; tail dark greyish brown glossed with purple. The colours fade, the head and neck become light brown, almost buff, and the edges of the tail-feathers, especially towards the base, isabelline, whilst all gloss is lost. In some specimens, apparently young, traces of barring remain on the lower parts.

Bill black; irides crimson; legs and feet black.

Length about 19; tail 10; wing 6·5; tarsus 2·1; bill from gape 1·7.

Distribution. Only found in the Andaman Islands and Cocos.

Habits, &c. A forest bird fond of coming into gardens, and much resembling *C. sinensis* in its ways. It breeds about May and June; a nest was found by Captain Wimberley in a high tree, and contained two white eggs measuring about 1·32 by 1·12.

1133. Centropus bengalensis. *The Lesser Coucal.*

Cuculus bengalensis, *Gmel. Syst. Nat.* i, p. 412 (1788).

Centropus bengalensis, *Blyth, J. A. S. B.* xi, p. 1104; *Blyth & Wald. Birds Burm.* p. 82; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 70; *Gammie, S. F.* v, p. 385; *Hume & Dav. S. F.* vi, p. 171; *Bingham, S. F.* ix, p. 169; *Barnes, Birds Bom.* p. 133; *Shelley, Cat. B. M.* xix, p. 352.

Centropus viridis, *apud Blyth, Cat.* p. 78; *Horsf. & M. Cat.* ii, p. 685; *Jerdon, B. I.* i, p. 350; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 98; *nec* Cuculus viridis, *Scop.*

Centrococcyx bengalensis, *Hume & Oates, S. F.* iii, p. 84; *Hume, S. F.* v, p. 28; xi, p. 78; *id. Cat.* no. 218; *Ball, S. F.* vii, p. 208; *Cripps, ibid.* p. 266; *Davison, S. F.* x, p. 361; *Oates, B. B.* ii, p. 127; *id. in Hume's N. & E.* 2nd ed. ii, p. 406.

Centropus javanicus, *Shelley, Cat. B. M.* xix, p. 354, partim.

Nyong, Lepcha; *Kyok-Kyok*, Bhot.; *Ulu Kukuha*, Assam.

Coloration. Head and neck all round, upper back, rump, and lower parts black with purplish gloss; tail black with green gloss; wings and their coverts both upper and under, scapulars, and interscapulary region deep chestnut; tips of quills more or less infuscated.

The nestling is dark brown, with large rufous spots on the head and neck, and rufous bars on the back, wings, and tail; lower parts rufescent white, with dark spots on the throat and dusky bars on the lower abdomen and flanks. The bird then passes without a moult into a second plumage: the head and neck above and at the sides, the back, scapulars, and wing-coverts are brown, with pale shaft-stripes and white shafts; the rump and upper tail-coverts, two of which extend nearly to the end of the tail, are narrowly barred black, glossed with green and rufous; the wings and tail as in adults, but the wings more infuscated and the tail-feathers with rufous tips; lower parts rufescent-white, throat speckled with dark brown; flanks, lower abdomen, and lower tail-coverts with narrow dark bars. This plumage is assumed gradually, and the change to the adult plumage, partly at all events by a moult, generally takes place in March or April; the white shafts to the scapulars and coverts being longer retained.

The second garb is called the winter or seasonal plumage by most authors, but I can find no evidence that it is ever assumed by birds that have once attained adult coloration, and there are several winter birds in the British Museum collection with the adult dress. The long upper tail-coverts appear peculiar to the immature plumage.

Bill and legs black, iris crimson in adults; in the young the bill is yellowish, dark on the culmen, iris brown to yellow; legs plumbeous.

Length of males about 13; tail 7; wing 5·4; tarsus 1·6; bill from gape 1·1: in females, length about 14·5; tail 8; wing 6·7; tarsus 1·75; bill from gape 1·25.

Some specimens from Assam and Burma are referred by Shelley in the British Museum Catalogue to a distinct species *C. javanicus*, but I am unable to separate them from *C. bengalensis*.

Distribution. The Lesser Coucal has been found very sparingly in the Peninsula of India in Travancore, the Wynaad, Mysore, Orissa, and Singhbhoom; not, so far as I can ascertain, in the Central Provinces, Bombay Presidency, North-west Provinces, nor Punjab, nor in Ceylon. Jerdon (Madr. Jour. L. S. xiii, pt. 1, p. 172) states that Elliot found it in the Southern Mahratta country; but this was probably a mistake, as the locality was not mentioned in the 'Birds of India.' It is more common in Bengal, and is found about Calcutta and up to about 5000 feet in Sikhim, and ranges from Assam through Burma to the Malay Peninsula and Southern China.

Habits, &c. Very similar to those of *C. sinensis*, but this bird is chiefly found in high grass, not in forest nor scrub. The call of the female is said by Gammie to be double—first a series of sounds like *whoot*, *whoot*, *whoot*, &c., ventriloquistic, appearing to come from a distance; then, after an interval, *kurook*, *kurook*, &c., no longer ventriloquistic. Gammie did not observe the male calling. This species feeds on grasshoppers. It breeds from May to August, in different localities, making a domed nest of coarse grass, the living blades being bent over and incorporated. The eggs are two or three in number, white, chalky, and about 1·17 by 1·01 inches.

Order IX. PSITTACI.

Whilst several of the groups here classed as orders, because ornithologists have not yet agreed how they are to be arranged in larger divisions, are really of subordinal rank, the Parrots by general consent stand apart from all other birds, and undoubtedly form an Order by themselves: distinguished by opisthocœlous dorsal vertebræ, combined with zygodactyle feet, and by the upper mandible being loosely articulated to the skull, so as to be moveable. The bill is short, stout, and strongly hooked. The palate is desmognathous. There is a distinct fleshy cere at the base of the bill, as in Birds of Prey. The tongue is thick and fleshy. The deep plantar tendons are galline, as in *Coccyges*. The ambiens muscle is variable, and so are the carotids. The furcula is weak and sometimes incomplete. There are no cæca, and the gall-bladder is generally wanting.

The feathers are furnished with an aftershaft; the spinal feather-tract is well defined on the neck and forked on the upper back. The oil-gland is usually present and tufted, but is wanting in a few genera. There are twelve tail-feathers except in the Papuan *Oreopsittacus*, which has 14. Primaries 10.

All Parrots lay white eggs in a hole, generally excavated by the parent birds, in the trunk or a branch of a tree. There is no nest, the eggs being laid on the wood. Some species, occasionally at all events, make use of hollows not excavated by themselves. The young are hatched naked, and the feathers remain in the sheaths until the birds are nearly full-grown.

The Parrots have been very variously divided by different ornithologists, and Garrod (P. Z. S. 1874, p. 594) made the common Indian genus *Palæornis* the type of a family. But generally *Palæornis* has been classed in the same family with *Psittacus*, and this is the arrangement adopted by Salvadori in the British Museum Catalogue. Only three genera are found within Indian limits, and these all belong to one family and subfamily.

Family PSITTACIDÆ.

Key to the Genera.

a. Tail long and graduated, longer than wing	PALÆORNIS, p. 246.
b. Tail much shorter than wing.	
a'. Bill swollen at sides, deeper than long	PSITTINUS, p. 259.
b'. Bill compressed, longer than deep	LORICULUS, p. 260.

Genus **PALÆORNIS**, Vigors, 1825.

Tail very long and graduated, the median feathers narrow, much exceeding the others in length: bill thick, deeper than long; upper mandible swollen at the sides, culmen convex, much curved; lower mandible short.

Birds of this genus are common throughout India, Ceylon, and Burma. Their prevailing colour is green, except in a few species. They are usually seen in flocks, which feed sometimes on the fruit of trees, sometimes on seeds, which they not unfrequently pick up from the ground. All have a rather swift arrowy flight, and a more or less harsh screaming note. All are favourite cage-birds. Species of *Palæornis* are found throughout the Oriental region, in the Seychelles, Mauritius, and Rodriguez, and in parts of Tropical Africa.

*Key to the Species**.

a. Head (except chin and mandibular stripe in males) and body green; bill deep red; a rose collar in males, wanting in females.
  a′. Large red patch on wing-coverts; wing exceeding 7·5.
    a″. Smaller: length 17–19·5; tarsus greenish grey .... *P. eupatria*, p. 247.
    b″. Larger: length 20–22; tarsus dull orange.
      a^3. Nape and sides of head suffused with glaucous grey .... *P. nepalensis*, p. 248.
      b^3. Nape and sides of head without grey tinge. [p. 248.
        a^4. Bill 0·85 high at base .... *P. indoburmanicus*,
        b^4. Bill an inch high at base ...... *P. magnirostris*, p. 249.
  b′. No red patch on wing-coverts; wing less than 7 .... *P. torquatus*, p. 250.
b. Head partly or wholly not green.
  c′. Head red in male, slaty in female; back green: wing about 5·5.
    c″. Under wing-coverts bluish green.... *P. cyanocephalus*, p. 251.
    d″. Under wing-coverts green, not bluish. *P. rosa*, p. 252.
  d′. Head dark slaty in both sexes; back green: wing 6–6·5.
    e″. Terminal portion of tail bright yellow. *P. schisticeps*, p. 253.
    f″. Terminal portion of tail dull pinkish. *P. finschi*, p. 254.
c. Crown and upper back grey; breast green.
  e′. An emerald-green collar .... *P. calthropæ*, p. 256.
  f′. No collar .... *P. caniceps*, p. 258.
d. Crown and upper back grey; brest grey or greyish green .... *P. columboides*, p. 255.
e. Crown and nape pinkish or bluish grey; breast red .... *P. fasciatus*, p. 256.

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* The young of several species, like *P. torquatus* ♀, are green throughout, but the bill is black or brown or pale red, not deep red. These young birds are difficult to distinguish at first, but they soon acquire the distinctive coloration of adults.

f. Crown and nape green; sides of head including ear-coverts brick-red.
  g'. Upper mandible red.
    g''. Breast yellowish green .... *P. erythrogenys* ♂, p. 258.
    h''. Breast green with a bluish tinge .... *P. tytleri* ♂, p. 259.
  h'. Upper mandible black.
    i''. Mandibular band chiefly black ...... *P. erytkrogenys* ♀, p. 258.
    k''. Mandibular band dark green........ *P. tytleri* ♀, p. 259.

1134. **Palæornis eupatria.** *The Large Ceylonese Paroquet.*

Psittacus eupatria, *Linn. Syst. Nat.* i, p. 140 (1766).
Palæornis alexandri, *apud Layard, A. M. N. H.* (2) xiii, p. 262; *nec* Psittacus alexandri, *Linn.*
Palæornis eupatria, *Hume, S. F.* i, p. 433; ii, p. 9; *id. Cat.* no. 147; *Legge, Birds Ceyl.* p. 168; *Parker, Ibis,* 1886, p. 183; *Oates in Hume's N. & E.* 2nd ed. iii, p. 82 (partim); *Salvadori, Cat. B. M.* xx, p. 435.

Labu girawa, Cing.

Coloration. Male. Above grass-green, much brighter on the forehead and lores, and rather darker on the wings; a dark line from nostril to eye; a rose-pink collar round the back and sides of neck, nape just in front of collar more or less tinged bluish grey; chin (thinly feathered) and a stripe from the lower mandible to the rose collar black; a large deep red patch on the secondary wing-coverts; rump rather brighter green than the back; median tail-feathers passing from green at the base into verditer-blue, and then into yellowish at the tips; throat and breast dull pale green; abdomen brighter; lower surface of quills and larger under wing-coverts greyish brown, lesser under wing-coverts bright green; tail-feathers below dull yellow.

Female and *young* without either rose collar or black mandibular stripe.

Bill deep red; iris pale yellow, with a bluish-grey inner circle; feet plumbeous.

Length about 19; tail 11·5; wing 8; tarsus ·8; bill from cere at gape to point 1; depth of upper mandible (culmen to gape) ·75. Females a little less.

Distribution. Throughout the greater part of Ceylon. Whether the Paroquets observed in the Carnatic by Jerdon, and in Mysore by Taylor, and the individual taken from a Shahin falcon by Jerdon in Malabar, belonged to this or the next species is uncertain. There is no specimen from Southern India in the British Museum (including the Hume) collection. The measurements given by Jerdon agree with *P. nepalensis*, the cinereous feet with *P. eupatria*.

This and the following three species are merely races or subspecies of one well-marked form. *P. eupatria* is smaller than the others and has a smaller bill.

Habits, &c. The habits of all four races are precisely similar. They keep to well-wooded tracts, and are social birds living in colonies and generally flying in flocks, often uttering a shrill call when flying. They feed on grain and fruit. They lay from 2 to 4 white eggs in a hole made by themselves in the trunk of a tree or in a large branch. Average size of fifty eggs 1·2 by ·95. These Parrots are less commonly kept tame than *P. torquatus,* and are less frequently taught to talk.

1135. **Palæornis nepalensis.** *The Large Indian Paroquet.*

Palæornis nepalensis, *Hodgs. As. Res.* xix, p. 177 (1836); *Rainey, S. F.* iii, p. 382; *Hume, S. F.* vii, p. 458; *id. Cat.* no. 147 ter; *Scully, S. F.* viii, p. 239; *Salvadori, Cat. B. M.* xx, p. 437.

Palæornis alexandri, *apud Jerdon, Madr. Jour. L. S.* xi, p. 208; *Blyth, Cat.* p. 4, partim; *Horsf. & M. Cat.* ii, p. 610, pt.; *Adams, P. Z. S.* 1859, p. 173; *Jerd. B. I.* i, p. 256, pt.; *Blyth, Ibis,* 1863, p. 1, pt.; *McMaster, J. A. S. B.* xl, pt. 2, p. 208; *nec* Psittacus alexandri, *L.*

Palæornis sivalensis, sacer, punjabi, *and* vindhiana, *Hutton, S. F.* i, pp. 335–338 (1873).

Palæornis sivalensis, *Hume, S. F.* ii, p. 9; vi, p. 117.

Palæornis eupatrius, *apud Ball, S. F.* ii, p. 389; vii, p. 205; *Davidson, S. F.* x, p. 296; *Taylor, S. F.* x, p. 457; *Barnes, Birds Bom.* p. 108; *Oates in Hume's N. & E.* 2nd ed. iii, p. 82, partim; *nec Linn.*

The Alexandrine Parrakeet, Jerdon; *Chandana,* B.: *Chanda-ban-i,* H. (Mussooree); *Karan-suga, Kararia,* Nepal; *Ne-tso,* Lepcha; *Rai Tota,* H.; *Pedda chilluka,* Tel.; *Peria killi,* Tam.

Coloration of both sexes the same as that of *P. eupatria* except that the black mandibular band is very broad, and that the occiput, nape, and cheeks are more or less washed with bluish grey. The size is considerably larger and the bill conspicuously more massive.

Length about 21; tail 12·5; wing 8·5; tarsus ·8; bill from cere 1; depth of upper mandible ·8. Females rather smaller. The tarsus in Himalayan birds is dirty flesh-coloured or yellowish.

Distribution. Northern and Central India, from the Lower Himalayas to the Central Provinces (Kamptee, Raipur, Sambalpur) and the Northern Circars, and from Kángra, the Jhelum district of the Punjab, and Mount Abu to Bengal (Rajmehal hills and, according to some, Calcutta). Rare or wanting in the Bombay Presidency south of the Sátpura range in Khandesh. It is uncertain whether the Sundarban rose-band Paroquets should be referred to this or the next form.

Habits, &c. Those of *P. eupatria.* The breeding-season varies somewhat in different parts of the country, being usually from December, or even earlier, till March; but in Hume's 'Nests and Eggs,' 2nd ed., either this species or the next is said to breed in the Eastern Sundarbans from March to May. In the Kángra valley *P. nepalensis* breeds in April. An egg taken there by Major Cock measured 1·52 by ·95.

1136. **Palæornis indoburmanicus.** *The Large Burmese Paroquet.*

Palæornis alexandri, *apud Blyth, Cat.* p. 4, partim; *Jerdon, B. I.* i, p. 256, pt.; *Blyth, Birds Burm.* p. 54; *nec Linn.*

Palæornis eupatrius, *apud Wald. in Blyth's Birds Burm.* p. 55; *Anders. Yunnan Exped., Aves,* p. 567; *nec Linn.*

Palæornis magnirostris, *apud Hume & Oates, S. F.* iii, p. 55; *Hume & Armstr. S. F.* iv, p. 307; *Wardlaw Ramsay, Ibis,* 1877, p. 453; *Hume & Dav. S. F.* vi, p. 117; *nec Ball.*
Palæornis indoburmanicus, *Hume, S. F.* vii, p. 459 (1878); xi, p. 54; *id. Cat.* no. 147 quat.; *Bingham, S. F.* ix, p. 159; *Oates, B. B.* ii, p. 139; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 573; v, p. 559; *id. Cat. B. M.* xx, p. 438.

Kyet-tau, Kyet-tu-yuay, Kyay-hpounkah, Burm.

Coloration. Both sexes similar to those of *P. eupatria*, but considerably larger in size and more brightly coloured throughout. The throat is much yellower, sometimes pure yellow; and the tarsi are yellow, not grey. From *P. nepalensis* the present species is distinguished by brighter coloration; by having the occiput and sides of the head green like the forehead, not washed with bluish (there is sometimes a narrow bluish-grey band above the rose collar); and by the much narrower black mandibular stripe.

Iris bright yellow; cere yellow; bill bright red, the tip yellow; eyelids pale pink, the edges orange; legs yellow-orange (*Oates*).

Length 22; tail 13; wing 8·5; tarsus ·85; bill from cere 1·1; depth of upper mandible ·85. Female rather smaller.

Distribution. From the base of the Eastern Himalayas to the Salween valley, but not in Tenasserim south of the neighbourhood of Moulmein and Kaukarit. This species is found also in Cambodia. Specimens from the Sikhim Terai and Bhután Duars have the broad mandibular band of *P. nepalensis*, and are coloured like that species on the breast; they are clearly intermediate between *P. nepalensis* and *P. indoburmanicus*.

Habits, &c. Similar to those of *P. eupatria* and *P. nepalensis*. *P. indoburmanicus* keeps chiefly to the plains and the neighbourhood of cultivation, it does not ascend the hills to any height, and never frequents dense forests. It breeds in December, January, and February, and the eggs measure about 1·35 by 1·02.

1137. **Palæornis magnirostris.** *The Large Andaman Paroquet.*

Palæornis alexandri, *apud Blyth, J. A. S. B.* xxviii, p. 413; *id. Ibis,* 1863, p. 369; *Ball, S. F.* i, p. 60; *nec Linn.*
Palæornis magnirostris, *Ball, J. A. S. B.* xli, pt. 2, p. 278 (1872); *Hume, S. F.* ii, pp. 9, 176; *id. Cat.* no. 147 bis; *Salvadori, Cat. B. M.* xx, p. 440.
Palæornis eupatrius, *apud Walden, Ibis,* 1873, p. 297; *nec Linn.*

This race is distinguished from *P. indoburmanicus* by its enormous bill, and generally by having the red patch on the wing-coverts brighter red; the narrow blue collar above the rose collar in males is very distinct as a rule.

Length about 23; tail 14; wing 8·5; tarsus ·85; bill from cere 1·2; height of upper mandible 1.

Distribution. The Andaman Islands; Cocos Islands.

Habits, &c. Similar to those of the allied races.

1138. **Palæornis torquatus.** *The Rose-ringed Paroquet.*

Psittacus torquatus, *Bodd. Tab. Pl. Enl.* p. 32 (1783).
Palæornis torquatus, *Blyth, Cat.* p. 4; *Layard, A. M. N. H.* (2) xiii, p. 262; *Horsf. & M. Cat.* ii, p. 611; *Jerd. B. I.* i, p. 257; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 232; *Hume, S. F.* i, p. 170; ii, p. 13; xi, p. 54; *id. Cat.* no. 148; *Blyth, Birds Burm.* p. 55; *Hume & Dav. S. F.* vi, p. 118; *Legge, Birds Ceyl.* p. 171; *Oates, B. B.* ii, p. 141; *id. in Hume's N. & E.* 2nd ed. iii, p. 85; *Barnes, Birds Bom.* p. 108; *Newnham, Jour. Bom. N. H. Soc.* iv, p. 54; *Salvadori, Cat. B. M.* xx, p. 433.

Tota, Lybar Tota, H.; *Gallar,* in N. W. P.; *Tiya, Tiya tota,* Beng.; *Ragu,* Mahr.; *Chilluka,* Telegu; *Killi,* Tam.; *Rana girawa,* Cing.; *Kyay-gyot,* Burm.

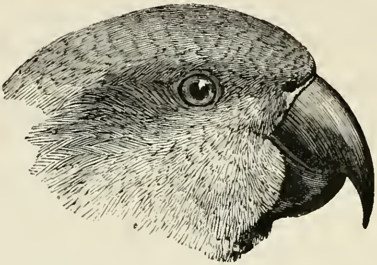

Fig. 70.—Head of *P. torquatus*, $\frac{1}{1}$.

Coloration. Male. Very similar to *P. eupatria*, except that there is no red wing-spot. General colour bright green; a fine blackish line from nostril to eye; occiput, nape, and cheeks tinged with pale greyish blue; a rose collar round the neck except in front; chin and a band from the mandible to each side of the rose collar black; smaller and middle upper wing-coverts considerably paler green than the greater coverts and quills; median tail-feathers green at the base, then bluish grey; other tail-feathers green on the outer webs, yellow on the inner, all tipped with yellow and dull yellow beneath; lower parts paler and yellower than upper surface; wing-lining greenish yellow.

Female. No black band nor rose collar, but an indistinct emerald-green ring round the neck. Young birds resembles females.

Bill cherry-red; irides pale yellow; feet cinereous (*Jerdon*). Upper mandible red, lower varying from red to black in different localities (*Hume*).

Length about 16·5; tail 10; wing 6·75; tarsus ·65; bill from cere ·85.

Distribution. Throughout India and Ceylon, and from Assam to Pegu, but not in Tenasserim. This Paroquet is found to the eastward in Cochin China, but statements of its occurrence in the Malay Peninsula and China are probably due to caged individuals having been taken thither. In India, *P. torquatus* extends to the wooded parts of the Punjab, Sind, and Cutch, and to the base of the Himalayas, where the country is open; but it is not found as a rule on hills nor in large forests. It has been seen at Quetta. A closely allied form, a geographical race in fact, *P. docilis*, inhabits tropical Africa.

Habits, &c. This is by far the commonest and most familiar of Indian Parrots, abounding about towns and villages in most parts of the country, and keeping to open and cultivated land. It is often seen perched on houses and buildings of various kinds, such as temples or macháns about fields, and it does much damage by pilfering grain and fruit. It occurs in large flocks at times, and these often collect in great numbers towards sunset and perch for the night on trees near towns and villages, with Crows and Mynas. Sometimes bamboos are selected for perching on. The cry of this Parrot, often uttered during the bird's swift arrowy flight, is shrill and rather harsh.

The breeding-season extends from January to May; the majority of the eggs, usually four in number, being laid in February to the southward, and in March in Northern India. In Upper Assam this bird is said by Mr. Cripps to breed in June. The eggs are white and glossless, and measure about 1·2 by ·95.

This is the Parrot most commonly kept tame in India; it is a docile bird and imitates the human voice well.

1139. **Palæornis cyanocephalus.** *The Western Blossom-headed Paroquet.*

Psittacus cyanocephalus, *Linn. Syst. Nat.* i, p. 141 (1766).
Psittacus purpureus, *Müll. Natursyst. Suppl.* p. 74 (1776); *Walden in Blyth's Birds Burm.* p. 56.
Palæornis bengalensis, *apud Jerdon, Madr. Jour. L. S.* xi, p. 208.
Palæornis cyanocephalus, *Wagl. Mon. Psitt.* (*Abh. k. bayer. Ak. Wiss.* i,) p. 517; *Blyth, Cat.* p. 5 (part.); *Horsf. & M. Cat.* ii, p. 616 (part.); *Legge, Birds Ceyl.* p. 174; *Salvadori, Cat. B. M.* xx, p. 448.
Palæornis rosa, *apud Jerdon, B. I.* i, p. 259; *Beavan, Ibis*, 1865, p. 409; *Blyth, Ibis*, 1870, p. 162; *Gould, Birds of Asia*, vi, pl. 2 (pt. xxvi).
Palæornis purpureus, *Hume, N. & E.* p. 116; *id. Cat.* no. 149; *Scully, S. F.* viii, p. 241; *Vidal, S. F.* ix, p. 51; *Butler, ibid.* p. 384; *Barnes, Birds Bom.* p. 109; *Oates in Hume's N. & E.* 2nd ed. iii, p. 87.

The Rose-headed Parrakeet, Jerdon; *Tuia Tota*, H. (in S. India); *Faraida*, Beng.; *Tui-suga*, Nepal; *Kir*, Mahr.; *Rama chilluka*, Tel.; *Batu girawa*, *Malitchia*, Cing.; *Killi*, Tam. Ceylon.

Coloration. Male. Head above and at the sides red, tinged with blue (like the bloom on a plum) on the lower cheeks, occiput, and nape, most strongly near the narrow black collar that includes the chin and extends from the lower mandible round the neck; hindneck and sides of neck, behind the collar, verdigris-green; rump the same; back and scapulars yellowish green; wings green;

quills pale-edged; coverts edged with verdigris; a deep red patch on the middle secondary-coverts; median tail-feathers blue, greener towards the base, broadly tipped white, the next pair with the outer webs blue, the others green on the outer, yellow on the inner webs, all except the median pair tipped with yellow, all yellowish below; lower parts light yellowish green; axillaries and under wing-coverts bluish green. Occasionally the wing-spot is orange, not red.

Female. Head dull bluish grey (plum-blue), cheeks and chin greyer and paler; no black nor verdigris collar, but a yellow ring roung the neck, broader on the side and covering the throat.

Young birds are green throughout, and assume the cap gradually.

Upper mandible orange-yellow, lower black or blackish; iris white or yellowish white; feet dusky sap-green.

Length about 14; tail 8·5; wing 5·25; tarsus ·6; bill from cere to tip ·6. Females rather less.

Distribution. Throughout the Peninsula of India and Ceylon in suitable tracts, extending west to Mount Abu, Sámbhar, and the Eastern Punjab, and throughout the lower Himalayas (according to Hume) to near Murree. This bird is found on the Western Himalayas up to about 5000 feet. This species and the next both occur in the Terai of Eastern Nepal, Sikhim, and the Bhután Duars, and perhaps in parts of Bengal. The statement (S. F. vii, p. 261) that this species occurs in Dibrugarh, Assam, appears due to some mistake. Mr. Cripps's specimens in the Hume collection are all *P. rosa.*

Habits, &c. This is far more a forest-bird than *P. torquatus*, though it is found in well-wooded cultivated districts as well as in forest. It is somewhat migratory, retiring to the denser woods and often to hill-forests to breed, and visiting more open country in the rains. Its flight is even swifter than that of *P. torquatus*, and its cry is softer and more musical; otherwise its habits are the same. The breeding-season is from February to May; and the eggs, which are usually four in number, are white when fresh, broader in proportion than those of *P. torquatus*, and much smaller, the average measurements being 1 by ·81. This Paroquet is less frequently kept tame than *P. nepalensis* and *P. torquatus.*

There can be no question that the Indian, not the Burmese, species was the *Psittacus cyanocephalus* of Linnæus. There was a mistake, as Legge pointed out, in Gould's 'Birds of Asia,' and the names of the two were exchanged. This was also noticed in Gould's letterpress under *P. rosa.* "Blossom-headed Parrakeet" is Latham's name, and more than 100 years old.

1140. **Palæornis rosa.** *The Eastern Blossom-headed Paroquet.*

Psittacus rosa, *Bodd. Tabl. Pl. Enl.* p. 53 (1783).
Psittacus bengalensis, *Gmel. Syst. Nat.* i, p. 325 (1788).

Palæornis cyanocephalus, *apud Blyth, Cat.* p. 5 (part.); *Gould, Birds of Asia,* i, pl. 3; *Blyth & Wald. Birds Burm.* p. 55; *Hume & Dav. S. F.* vi, p. 118; *Anders. Yunnan Exp., Aves,* p. 568; *Hume, Cat.* no. 149 bis; *id. S. F.* xi, p. 55; *Bingham, S. F.* ix, p. 160; *Oates, B. B.* ii, p. 145; *id. in Hume's N. & E.* 2nd ed. iii, p. 88; *nec* Psittacus cyanocephalus, *L.*

Palæornis rosa, *Jerd. B. I.* i, p. 259 (part.); *Salvadori, Cat. B. M.* xx, p. 453.

Palæornis bengalensis, *Jerdon, Ibis,* 1872, p. 6; *Hume, S. F.* ii, pp. 9, 16; iii, p. 56; v, p. 21; *Armstrong, S. F.* iv, p. 308

Kyay-ta-ma, Burmese.

Coloration very similar to that of *P. cyanocephalus.* In the male the forehead and cheeks are rosy pink, not red, passing on the occiput into greyish lilac; the rump and hind-neck like the back; the red spot on the wing-coverts darker; the tail paler blue; the tips of the middle tail-feathers yellowish. In the female the head is greyer and paler, the yellow collar less distinct, and the red spot on the wing-coverts is present as in the male, though smaller. In both sexes the plumage above and below is a purer green and less yellow, and the axillaries and under wing-coverts are green and not bluish green.

Length about 13·5; tail 7; wing 5·5; tarsus ·55; bill from cere to tip ·65. In the female the tail is generally rather shorter.

Distribution. From the base of the Himalayas in Eastern Nepal, Sikhim, and Assam to Tavoy, but not apparently further south. To the eastward this species ranges into Cochin China, Siam, and Southern China.

Habits, &c. Similar to those of *P. cyanocephalus.* The eggs white, four in number, and measuring about ·96 by ·82, are laid in February and March.

Psittacus rosa of Boddaert was founded on the "Perruche de Mahé" of the 'Planches Enluminées,' and this figure, like the "Rose-headed Ring Parrakeet" of Edwards, the type of Gmelin's *P. bengalensis,* was clearly taken from the present species, not from the Western bird.

1141. **Palæornis schisticeps.** *The Slaty-headed Paroquet.*

Palæornis schisticeps, *Hodgs. As. Res.* xix, p. 178 (1836); *Blyth, Cat.* p. 5; *id. J. A. S. B.* xix, p. 232; *Horsf. & M. Cat.* ii, p. 615; *Jerdon, B. I.* i, p. 261; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 20; *Beavan, Ibis,* 1869, p. 411; *Jerdon, Ibis,* 1872, p. 6; *Hume, S. F.* ii, p. 17; xi, p. 56; *id. Cat.* no. 150; *Scully, S. F.* viii, p. 242; *Oates in Hume's N. & E.* 2nd ed. iii, p. 89; *Sharpe, Yark. Miss., Birds,* p. 114; *Salvadori, Cat. B. M.* xx, p. 456.

Palæornis hodgsoni, *Finsch, Papag.* ii, p. 50 (1868).

Pahári tuiya, H. (Mussooree); *Madana Suga,* Nepal; *Gagi* of Calcutta bird-dealers.

Coloration. Male. Head dark lavender (bluish slaty); chin and narrow ring round neck black; hind-neck and sides of neck behind the black ring bright verdigris-green, passing into the green with a slight yellowish tinge of the back, scapulars, and coverts; rump a little brighter; a dark red patch on median secondary-coverts; greater coverts and quills darker, the latter yellow at the edges; bend of wing yellow; median tail-feathers blue in the middle, green at the base and along their edges, and clear yellow for the terminal quarter to half, the other rectrices green on outer webs, yellow on inner and at the tips, all deep yellow beneath; lower parts from throat light green, lesser and median under wing-coverts bluish green.

The *female* wants the red wing-patch. The young is green at first and assumes the cap gradually.

Upper mandible yellow, tinged with coral-red; tip and lower mandible yellow; irides straw-yellow; orbital skin slaty; legs dusky green (*Jerdon*).

Length about 16; tail 9·5; wing 6·5; tarsus ·6; bill from cere to tip ·75. Females a little less.

Distribution. Throughout the Himalayas, below about 8000 feet, from Murree to Bhután; more common to the westward. Young specimens from the Khási hills were referred to this species by Godwin-Austen, but after examining them I do not think they belong either to *P. schisticeps* or *P. finschi.*

Habits, &c. This is a mountain bird, ascending in summer as high as 10,000 feet, but descending to a low elevation in winter, and breeding in the last half of March, in April, and early in May. The nest is often in natural hollows in trees, but sometimes in holes cut by the bird. The eggs are white, four or five in number, and measure about 1·21 by ·92.

1142. **Palæornis finschi.** *The Burmese Slaty-headed Paroquet.*

Palæornis finschi, *Hume, S. F.* ii, p. 509; *id. Cat.* no. 150 bis; *Wald. in Blyth's Birds Burm.* p. 55; *Hume & Dav. S. F.* vi, p. 119; *Bingham, S. F.* ix, p. 160; *Oates, B. B.* ii, p. 142; *Hartert, J. f. Orn.* 1889, p. 431; *Salvadori, Cat. B. M.* xx, p. 458.

Coloration of both sexes similar to that of *P. schisticeps*, except that the head is paler, the mantle a much yellower green, and the terminal portion of the median tail-feathers dirty pinkish white instead of clear yellow. The middle tail-feathers are much narrower, and duller in colour throughout.

Length about 17, tail 11, wing 6 in males; in females, tail 8, wing 5·8.

Distribution. Eastern Pegu and Tenasserim; Oates found what was doubtless this Paroquet abundant in the Pegu hills, it was also found in large numbers by Hartert near Sadiya in Assam. It is probably this species, and not the last, that occurs, according to Blyth (Birds Burm. p. 55), in the Arrakan hills.

Habits, &c. Nothing particular recorded. The eggs have not been observed.

1143. Palæornis columboides. *The Blue-winged Paroquet.*

Palæornis columboides, *Vigors, Zool. Journ.* v, p. 274 (1835); *Jerdon, Madr. Jour. L. S.* xi, p. 209, pl. iii; *id. Ill. Ind. Orn.* pl. xviii; *Blyth, Cat.* pp. 5, 316; *Horsf. & M. Cat.* ii, p. 614; *Jerdon, B. I.* i, p. 261; *Hume, S. F.* ii, p. 21; *id. Cat.* no. 151; *Walden, Ibis,* 1874, p. 292; *Fairbank, S. F.* iv, p. 255; v, p. 395; *Bourdillon, S. F.* iv, p. 388; *Vidal, S. F.* ix, p. 52; *Butler, ibid.* p. 384; *Layard, Ibis,* 1880, p. 284; *Davison, S. F.* x, p. 353; *Barnes, Birds Bom.* p. 110; *Oates in Hume's N. & E.* 2nd ed. iii, p. 89; *Davidson, Jour. Bom. N. H. Soc.* vi, p. 334.

Palæornis melanorhynchus, *apud Sykes, P. Z. S.* 1832, p. 96, ♀ (*nec Wagl.*).

Palæornis peristerodes, *Finsch, Papag.* ii, p. 74 (1868); *Salvadori, Cat. B. M.* xx, p. 460.

Madangour tota, H.

Coloration. Male. Head, neck, upper back, and breast dove-grey (grey with a lilac tinge); forehead, lores, and sides of head around eyes bright bluish green; the frontal band passing upwards into blue; chin and complete narrow collar black, with a bright bluish-green ring, broadest on the throat, behind the black one; coverts and secondary-quills dark green, the former with pale edges; first primary black, the others blue with green edges; lower back and rump bluish green; middle tail-feathers blue, green at the base, tipped pale yellow, the next pair blue on the outer web, green near the base, the others green on the outer, yellow on the inner webs, all tipped with yellow, and all yellow beneath, dusky yellow on the median pair and on the outer webs of the others; abdomen green or bluish green. Birds from Khandála are bluer throughout the green parts of the plumage than more Southern specimens.

Females want the green collar and forehead, they have a bluish tinge on the lores and a little green round the eye, the back and breast are tinged with green. Young birds are green throughout.

In adult males the upper mandible is red, whitish at the tip; in females black; lower mandible dusky in both sexes; in young birds the bill is generally orange-brown (*Hume*); irides in adults creamy yellow; legs and feet glaucous green (*Davison*).

Length of males about 14·5; tail 8·5; wing 6; tarsus ·63; bill from cere to point ·8. Females are rather less.

Distribution. Forests along the Malabar coast, from the extreme south to Khandála near Bombay, chiefly on the hills up to 5000 feet elevation, sometimes higher on the Nilgiris. A supposed occurrence of this bird in Ceylon is on record, but must be regarded as doubtful.

Habits, &c. A forest bird, generally found on high trees. Its cry, according to Jerdon, is mellow, subdued, and agreeable. It feeds chiefly on fruit. It breeds in January and February, and the eggs, two to four in number, are white, roundish, and slightly polished, and measure about 1·12 by ·92.

1144. **Palæornis calthropæ.** *Layard's Paroquet.*

Palæornis calthrapæ, *Layard, apud Blyth, J. A. S. B.* xviii, p. 800 (1849); *id. Cat.* p. 340; *id. Ibis,* 1867, p. 294.
Palæornis calthropæ, *Layard, A. M. N. H.* (2) xiii, p. 263 (1854); *Holdsworth, P. Z. S.* 1872, p. 426; *Hume, Cat.* no. 151 bis; *Legge, Birds Ceyl.* p. 177, pl. vi; *Layard, Ibis,* 1880, p. 282; *Oates in Hume's N. & E.* 2nd ed. iii, p. 90; *Salvadori, Cat. B. M.* xx, p. 461.

Allu-girawa, Cingalese.

Coloration. Male. Forehead, lores, and area around each eye bright green; crown, nape, and sides of head greyish blue; back and scapulars the same, but paler, sometimes with a greenish wash; a broad collar round the neck and the lower parts from the throat bright green; vent and lower tail-coverts yellowish; chin and a band to the side of the neck, not extending to the back of the neck, black; the rump is much bluer than the back, and this colour passes gradually into the deep French-blue of the tail-feathers, which are all yellow at the tips and dusky yellow beneath; outer tail-feathers with a narrow green exterior border; wings green outside, the smaller coverts to the secondaries paler and yellower.

Female. The green on the face duller and less extended, otherwise like the male. The young is green throughout at first, except that the tail is blue above, then the rump takes a bluish tinge.

Upper mandible in males coral-red, yellowish at tip, black in females, lower mandible dusky red; irides yellow or greenish white or white; legs and feet dusky greenish or plumbeous green or plumbeous (*Legge*).

Length about 12; tail 6; wing 5·5; tarsus ·6; bill from cere to point ·7.

Distribution. Peculiar to Southern and Central Ceylon up to 5000 or 6000 feet above the sea, keeping to the hills and to the forests adjoining them.

Habits, &c. Very similar to those of the last species, but the cry is said by Legge to be harsh. The breeding-season commences in January; the eggs do not appear to have been described.

1145. **Palæornis fasciatus.** *The Red-breasted Paroquet.*

Psittacus fasciatus, *Müll. Natursyst. Suppl.* p. 74 (1776).
Psittacus vibrissa, *Bodd. Tabl. Pl. Enl.* p. 30 (1783).
Psittacus pondicerianus, *Gm. Syst. Nat.* i, p. 325 (1788).
Psittacus mystaceus, *Shaw, Gen. Zool.* viii, 2, p. 436 (1811).
Palæornis melanorhynchus, *Wagler, Abh. k. bayer. Ak. Wiss.* i, p. 511 (1832); *Finsch, Papag.* ii, p. 70; *Walden, Ibis,* 1873, p. 297; 1874, p. 290; 1875, p. 270; *Blyth & Wald. Birds Burm.* p. 57; *Armstrong, S. F.* iv, p. 308; *Hume, S. F.* v, p. 21; *Wardl. Rams. Ibis,* 1877, p. 453; *Hume & Dav. S. F.* vi, p. 120; *Anders. Yunnan Exped., Aves,* p. 568.
Psittacus nigrirostris, *Hodgs. Gray's Zool. Misc.* p. 85 (1844), descr. nulla; *Calc. Jour. N. H.* vii, p. 560.

Palæornis barbatus, *apud Blyth, Cat.* p. 6 (partim); *id. J. A. S. B.* xix, p. 233 (partim); *nec* Psittacus barbatus, *Gm.*
Palæornis osbecki, *apud Horsf. & M. Cat.* ii, p. 622 (partim); *nec* Psittacus osbecki, *Lath.*
Palæornis vibrisca, *Blyth, Ibis,* 1870, p. 163; *id. Birds Burm.* p. 56.
Palæornis javanicus, *apud Jerdon, B. I.* i, p. 262; *Blyth, Ibis,* 1863, p. 5; 1866, p. 353 (part.); *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 97; *Ball, J. A. S. B.* xli, pt. 2, p. 279; *id. S. F.* i, p. 60; *Walden, Ibis,* 1876, p. 343; *nec* Psittacus javanicus, *Osbeck.*
Palæornis fasciatus, *G. R. Gray, Hand-list,* ii, p. 143; *Hume, N. & E.* p. 118; *id. S. F.* ii, pp. 20, 180, 526; iii, p. 264; vii, p. 164; xi, p. 55; *id. Cat.* no. 152; *Scully, S. F.* viii, p. 243; *Bingham, S. F.* ix, p. 160; *Oates, B. B.* ii, p. 143; *id. in Hume's N. & E.* 2nd ed. iii, p. 90; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 574; v. p. 559; vii, p. 376; *id. Cat. B. M.* xx, p. 464.

Madna, Kájla, Gour Tota, H.; *Imrit Bhela,* Nepal.

Coloration. Male. A narrow frontal band extending to each eye and a broad stripe from the base of the lower mandible to each side of the neck black, the latter not prolonged to form a collar; chin sullied white; rest of head purplish grey, washed with greenish on the lores above the frontal band and round the eyes; hind-neck and sides of neck bright green; back, scapulars, and rump duller; wings green outside, with a large yellow patch on the median and greater secondary-coverts; first primary black, the others green, all with narrow yellow borders on both sides; middle tail-feathers blue, with broad green edges towards the base and yellowish-green extreme tips; outer tail-feathers bluish green; throat and breast vinaceous red, more or less tinged with blue anteriorly; abdomen bluish green; vent and lower tail-coverts yellowish green, tail dusky yellow beneath.

The *female* has the head duller and more tinged with green and the breast is without any bluish wash. Young birds are green throughout.

Upper mandible in males coral-red, the tip yellow; in females and young birds black, lower mandible always brownish black, except, according to Hume, in very young (nestling) males, which have sometimes, at all events, both mandibles orange-red (perhaps a few very young females also have reddish bills). Irides light yellow; legs dusky greenish yellow.

Length about 15; tail 8·5; wing 6·5; tarsus ·7; bill from cere ·85.

Distribution. Throughout the lower Himalayas up to about 5000 feet, as far west as Kumaun, also in Assam and the ranges to the southward, Tipperah, Cachar, Manipur, the whole of Burma, the Andaman Islands (not the Nicobars), Cambodia, Cochin China, and parts of Southern China. This species is represented in Java by an allied form, the true *P. alexandri*, distinguished chiefly by having the whole bill red in both sexes, and by smaller size.

Habits, &c. An inhabitant of well-wooded tracts of country, visiting clearings, rice-fields, &c. in quest of food. Its cry is much less harsh than that of *P. torquatus* or *P. eupatrius.* It breeds in the sál-forests of the Sub-Himalayan ranges about March and April, and lays four white glossless eggs, measuring about 1·15 by ·97. Major Bingham found this Paroquet breeding in Tenasserim in February.

1146. **Palæornis caniceps.** *Blyth's Nicobar Paroquet.*

Palæornis caniceps, *Blyth, J. A. S. B.* xv, pp. 23, 51, 368 (1846); *id. Cat.* p. 6; *Horsf. & M. Cat.* ii, p. 621; *Ball, S. F.* i, p. 61; *Hume, S. F.* ii, p. 178; viii, p. 51; *id. Cat.* no. 151 ter; *Salvadori, Cat. B. M.* xx, p. 470.

Coloration. *Male.* Forehead and a broad stripe to each eye, also chin and a wide mandibular band to each side of the neck, black; remainder of head, with back and sides of neck, brownish grey (isabelline), slightly washed with bluish behind and passing gradually into the green of the upper parts, which is yellower on the coverts and darker on the quills; primaries and their coverts black, only bordered with green on the outer webs, bluish towards the base; middle tail-feathers greyish towards the tips, sometimes bluish near the base; lower plumage green like the back; tail-feathers dark dingy yellow below.

The female has the grey of the cap tinged with bluish.

Upper mandible red in the male, black in the female, lower mandible black in both; iris orange-red; feet plumbeous green.

Length about 24; tail 14; wing 8·5; tarsus ·8; bill from cere 1·1.

Distribution. Nicobar Islands. A skin brought by Cantor from Penang was probably, like some other specimens of Cantor's, both of birds and mammals, derived from a caged individual.

Habits, &c. Davison, the only naturalist who has had good opportunities of observing this bird wild, says it is usually found singly or in very small parties, that keep much to high trees, and frequently utter a peculiar wild screeching note. The flight is very rapid.

1147. **Palæornis erythrogenys.** *The Red-cheeked Nicobar Paroquet.*

Palæornis erythrogenys, *Blyth, J. A. S. B.* xv, pp. 23, 51, 368 (1846); *id. Cat.* p. 6; *Horsf. & M. Cat.* ii, p. 620; *Blyth, Ibis*, 1863, pp. 5, 465 (partim); *Ball, S. F.* i, p. 60 (partim); *Hume, N. & E.* p. 119; *id. S. F.* ii, pp. 23, 181.

Palæornis nicobaricus, *Gould, B. of Asia*, vi, pl. 6 (1857); *Ball, J. A. S. B.* xxxix, pt. 2, p. 30 (partim); *Hume, Cat.* no. 152 bis; *Oates in Hume's N. & E.* 2nd ed. iii, p. 91; *Salvadori, Cat. B. M.* xx, p. 472.

Coloration. *Male.* Crown green; a black band, the feathers tipped with dark green, from nostril to eye; lores and sides of head, including ear-coverts, light brick-red; chin and broad mandibular stripe to each side of neck black; nape yellowish green, below the occiput slightly washed with lilac, sometimes so as to form an indistinct collar; upper back pale greenish yellow, suffused with grey, becoming bluish on the interscapulary region; wing-coverts yellow-green, except the greater primary-coverts, which, with the quills, are blue with green outer edges; the inner webs of the quills black except at the tips, which are dark green; rump and upper tail-coverts bright green; middle tail-feathers blue, edged and tipped green, outer feathers green with some blue along the shafts, all dull yellow below; lower parts green, the breast and throat yellower.

Female. Head and body above nearly uniform green, the red cheeks duller than in the male, and the mandibular stripes in part tinged with green; otherwise as in the male.

Young birds resemble the female.

In males the upper mandible vermilion, yellow at tip, lower horny black, yellowish horny, or dingy red; in females both mandibles are blackish, in very young birds of both sexes dull red. Irides yellow, creamy white, or pale brown; orbital skin greenish brown; legs dull earthy or brownish green (*Hume*).

Length about 19; tail 11; wing 7·5; tarsus ·75; bill from gape ·9.

Distribution. The Nicobar Islands.

Habits, &c. This Paroquet abounds throughout the Nicobar group, chiefly in small flocks. Young birds were found in the nest-holes by Davison in February and early in March.

1148. **Palæornis tytleri.** *The Red-cheeked Andaman Paroquet.*

Palæornis erythrogenys, *apud Blyth, Ibis*, 1860, p. 99; 1868, p. 132; 1873, p. 79, note; *Beavan, Ibis*, 1867, p. 319; *Ball, J. A. S. B.* xli, pt. 2, p. 279; *id. S. F.* i, p. 60 (part.); *Walden, Ibis*, 1873, p. 298.

Palæornis nicobaricus, *apud Walden, P. Z. S.* 1866, p. 555; *Ball, J. A. S. B.* xxxix, pt. 2, p. 241; *nec Gould.*

Palæornis affinis, *Tytler, Beavan, Ibis*, 1867, p. 320; *Blyth, Ibis*, 1868, p. 132; *Hume, S. F.* ii, pp. 9, 24, 184; *nec Gould*, 1858.

Palæornis tytleri, *Hume, Proc. A. S. B.* 1874, p. 108; *id. S. F.* ii, p. 454; *id. Cat.* no. 152 ter; *Salvadori, Cat. B. M.* xx, p. 474.

The male only differs from that of *P. erythrogenys* in being of a less yellowish green; the upper back and interscapulary tract are much bluer, and there is a bluish tinge on the breast. In females the mandibular stripe is green throughout. The size of *P. tytleri* is rather less. Length of males 15·5 to 18·5, tail 9 to 10·5, wing 7; of females, length 15, tail 7, wing 6·75.

Distribution. The whole Andaman group, including Barren Island, Narcondam, the Cocos, and Preparis; common everywhere.

This and the last species are only just separable, but the distinctions, small as they are, appear to be quite constant.

P. longicauda, from the Malay Peninsula, Sumatra, and Borneo, is an allied species; and a still more nearly related form is *P. modesta*, from Engano, off the S.W. coast of Sumatra.

Genus **PSITTINUS**, Blyth, 1842.

Size small. Tail less than half as long as wing, and rounded at the end; bill as in *Palæornis*.

This genus consists of a single species found in the Malay Peninsula and islands, and ranging into Tenasserim.

1149. **Psittinus incertus.** *The Little Malayan Parrot.*

Psittacus incertus, *Shaw, Nat. Misc.* xviii, pl. 769 (c. 1807).
Psittacus malaccensis, *apud Lath. Ind. Orn.* i, p. 130 (1790); *nec Gmel.* (1788).
Psittinus malaccensis, *Blyth, J. A. S. B.* xi, p. 789 (1842); *Horsf. & M. Cat.* ii, p. 608; *Blyth, Ibis,* 1863, p. 6; *id. & Wald. Birds Burm.* p. 58.
Tanygnathus malaccensis, *Blyth, Cat.* p. 3.
Psittinus incertus, *Hume & Dav. S. F.* vi, pp. 121, 500; *Hume, Cat.* no. 153 ter; *Oates, B. B.* ii, p. 147; *Salvadori, Cat. B. M.* xx, p. 501.

Coloration. Male. Head and neck bluish grey, becoming bright cobalt-blue on the forehead and vertex; upper back and scapulars blackish brown with an olive tinge; wings outside green, a large deep red patch on the smaller secondary-coverts, most of the other coverts and the quills conspicuously edged with greenish yellow; outer greater primary-coverts blue, edge of wing yellow, winglet-feathers with bluish edges; first primary and inner webs of the others blackish brown; lower back, rump, and upper tail-coverts cobalt-blue; median tail-feathers dark green, the other feathers yellowish green above, yellow beneath; chin whitish; breast olive-grey, passing into blue on the middle of the abdomen and green round the vent; wing-lining and axillaries crimson.

Female. Head and neck ruddy brown, yellowish at the sides and below; remainder of upper plumage green, washed with blue on the rump; lower parts yellowish green; wings, including wing-lining and axillaries, and tail as in males, but the red patch on the wing-coverts is smaller.

Young birds are deep green above and below, with the exception of the crimson wing-lining and a blue patch on the lower back.

In adult males the upper mandible is orange-vermilion, lower dusky or dull reddish brown, in females both are usually whitish; irides creamy white, eyelids and cere greenish brown or dusky green; legs and feet pale dirty green (*Davison*).

Length about 7·5; tail 1·9; wing 5; tarsus ·55; bill from cere ·7.

Distribution. Throughout the Malay Peninsula, Sumatra, and Borneo, ranging into Southern Tenasserim as far north as Tavoy and Nwalabo.

Habits, &c. To parts of Tenasserim this Paroquet is a seasonal visitant, arriving about April. It probably, however, only moves from one part of the country to another at no great distance. It goes about in small flocks, and has a sharp whistling note. The nidification has not been observed.

Genus **LORICULUS**, Blyth, 1849.

Bill much smaller and longer comparatively than in *Palæornis*, and much more compressed, the culmen less curved; the depth of the two mandibles together less than the length from cere to point; tail short, slightly rounded.

This genus ranges throughout the greater part of the Oriental region and into part of the Papuan. Two species out of about twenty that are known occur within our limits.

Key to the Species.

a. Crown green	*L. vernalis*, p. 261.
b. Crown red	*L. indicus*, p. 262.

1150. **Loriculis vernalis.** *The Indian Loriquet.*

Psittacus vernalis, *Sparrm. Mus. Carls.* no. 29 (1787).
Loriculus vernalis, *Blyth, Cat.* p. 10; *Horsf. & M. Cat.* ii, p. 627; *Jerdon, B. I.* i, p. 265; *Blyth, Ibis,* 1863, p. 6; *Walden, P. Z. S.* 1866, p. 538; 1873, p. 298; *Beavan, Ibis,* 1867, p. 320; 1869, p. 412; *Hume, S. F.* ii, pp. 185, 471; iii, p. 57; iv, p. 388; v, p. 25; xi, p. 56; *id. Cat.* no. 153; *Blyth & Wald. Birds Burm.* p. 58; *Hume & Dav. S. F.* vi, pp. 120, 500; *Vidal, S. F.* ix, p. 52; *Bingham, ibid.* p. 161; *Butler, ibid.* p. 384; *Oates, B. B.* ii, p. 146; *id. in Hume's N. & E.* 2nd ed. iii, p. 92; *Barnes, Birds Bom.* p. 111; *Salvadori, Cat. B. M.* xx, p. 517.
Coryllis vernalis, *Finsch, Papag.* ii, p. 721 (1868).

Bhora, Bho-ara, H. in S. India; *Latkan,* H. in Bengal; *Kyay-thatah, Kyun-hto,* Burm.

Coloration. Male. Upper parts green, except the rump and upper tail-coverts, which are rich crimson; crown rather lighter green, outer webs of quills above and upper surface of tail-feathers darker, back tinged with yellow; lower parts also green, but paler and yellower, especially on the breast; a patch of blue on the throat; inner webs of quills inside and larger under wing-coverts, also lower surface of tail-feathers, verditer-blue.

The female is a little darker in colour, and wants the blue on the throat partially or wholly. In young birds the crimson of the rump is mixed with green.

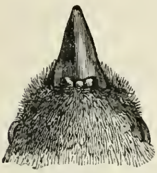

Fig. 71.
Head of *L. vernalis*, 1/1.

Bill dull coral-red, yellow at tip, cere red; iris pale yellowish white; legs pale orange (*Oates*, Pegu): bill dark yellow; feet leaden (*Jerdon*, Malabar).

Length about 5·5; tail 1·7; wing 3·7; tarsus ·45; bill from cere ·5.

Distribution. The neighbourhood of the Malabar coast from Cape Comorin to the latitude of Bombay, also east of the Bay of Bengal. This bird is found on the Nilgiris up to about 6000 feet, also in Western Mysore, and in Dharwar, Belgaum, &c., but only near the Sahyádri; it is unknown throughout the rest of India south of the Himalayas, and in the Himalayas it has not been recorded west of Sikhim and the Bhután Duars, where it is found, also in Assam, Sylhet, Cachar, Khási hills, Manipur, and throughout Burma, extending to the Malay Peninsula, in the southern portion of which it is replaced by *L. galgulus*. It is common in the

Andaman Islands, but has not been observed in the Nicobars. It is replaced by the next species in Ceylon.

Habits, &c. In some parts of the Western Gháts this is said to be a cold-weather visitant, above the Gháts it is only found in the rains; it probably, like other Parrots, shifts its quarters with the seasons, but to no great distance. It is swift of flight, and utters a screaming call when flying. It is found chiefly in clearings amongst forest, in gardens, and especially in groves of fruit-trees. It feeds on fruit of various kinds and on flower-buds, and is said to be particularly fond of cocoanut-palm juice—so much so as often to be captured in a stupified state after indulging in the intoxicating liquid. In the case of the allied *L. indicus* the juice of the wild palm *Caryota urens* is said by Legge to intoxicate the birds.

This Loriquet is often caged, and, like other species of the genus, becomes very tame, and has the habit of sleeping with its head downwards, hanging from its perch. It breeds from March to May, in Tenasserim in February, and lays 3 to 5 eggs in a hole or hollow in a tree without any nest. The eggs are white and measure about ·74 by ·6.

1151. **Loriculus indicus.** *The Ceylonese Loriquet.*

Psittacus indicus, *Gmel. Syst. Nat.* i, p. 349 (1788).
Psittacus asiaticus, *Lath. Ind. Orn.* i, p. 130 (1790).
Psittacula coulaci, pt., *Less. Traité.* p. 202 (1831).
Loriculus phillipensis, *Blyth, Cat.* p. 10; *nec* Psittacus phillipensis, *Müll.*
Loriculus asiaticus, *Blyth, Cat.* p. 312; *id. J. A. S. B.* xviii, p. 801; xix, p. 236; *Layard, A. M. N. H.* (2) xiii, p. 261; *Horsf. & M. Cat.* ii, p. 628; *Walden, Ibis,* 1867, p. 468.
Loriculus coulaci, *Blyth, Ibis,* 1863, p. 7; 1866, p. 226.
Loriculus edwardsi, *Blyth, Ibis,* 1867, p. 295.
Loriculus indicus, *Holdsworth, P. Z. S.* 1872, p. 426; *Hume, S. F.* vii, p. 368; *id. Cat.* no. 153 bis; *Legge, Birds Ceyl.* p. 180, pl. vi; *Salvadori, Cat. B. M.* xx, p. 526.

Gira-malitchia, Pol-girawa, Cing.

Coloration. Precisely similar to that of *L. vernalis*, except that the crown is deep red like the uropygium; this red passes into orange on the nape, and the hind-neck and interscapulary region are tinged with orange-yellow. Sexes alike. In the young the colours are duller and the head is green above.

Bill light orange-red; cere yellow; iris white; legs and feet dusky yellow (*Legge*).

Length about 5·5; tail 1·75; wing 3·7; tarsus ·45; bill from cere ·5.

Distribution. Ceylon, generally distributed, up to about 3500 feet, but much less common in the north part of the island.

Habits, &c. Precisely similar to those of the last species. Nidification not recorded.

Order X. STRIGES.

The Owls form almost as natural an order as the Parrots, and occupy, both in external characters and in their anatomy, a position between the *Psittaci* and the *Accipitres*. Although long regarded as a suborder of the Accipitrine or Raptorial birds, they have of late years been generally placed in a distinct ordinal group.

Amongst the more conspicuous characters are the reversible outer toe, the position of the eyes, which are always directed forward and are generally very large, and the short curved and hooked bill, the basal portion covered with a cere in which the nostrils are pierced, the cere being almost entirely concealed by the mass of bristly feathers on the lores and forehead. In most of the genera the head is large and the facial portion covered with feathers radiating from the eyes and forming the facial disk, the outer margin of which is surrounded by a ruff of close-textured feathers forming a conspicuous border. From the margin of the ruff above the eyes there arise in many Owls aigrettes of lengthened feathers, known also as horns or ear-tufts, the last term being incorrect. The plumage is soft, and the coloration generally brown or rufous, the feathers in some genera being delicately vermiculated or stippled as in the *Caprimulgi*.

The feet are strong and furnished with short claws; a hallux is always present. The oil-gland is nude. The spinal feather-tract is well defined on the neck. There is no aftershaft. There are always 11 primaries. The *flexor longus hallucis* leads to the hallux, and the *flexor perforans digitorum* to the remaining three digits, but the two tendons are united by a broad vinculum. There is no ambiens muscle; the femoro-caudal is present, but the accessory femoro-caudal and the semitendinosus and accessory semitendinosus are wanting. Basipterygoid processes are present and the palate is desmognathous, or, according to Gadow, schizognathous with a desmognathous tendency. Both carotids are present and the cæca are large. Cervical vertebræ 14.

All Owls lay white and very round eggs, and the majority, like Parrots and most Picarian birds, take possession of a hole or hollow in the trunk or a branch of a tree for the purpose of nidification, and use little or no lining. A few lay their eggs in holes amongst rocks, or on the ground, or in abandoned nests of other birds, and some are said to build their own nests of sticks. The young are hatched helpless and covered with down. The female, in some Owls, exceeds the male in size, but not to the degree that prevails amongst Accipitrine birds, whilst in many cases there is no difference in size between the sexes.

Owls are nocturnal or crepuscular and carnivorous and live for the most part on mammals, on other birds, or on reptiles; a few subsist on fish, and many of the smaller kinds on insects. The indigestible portions of the food—bones, hair, scales, &c.—are disgorged as pellets. It is not an uncommon thing to find masses of small bones in a hollow tree, thus accumulated.

The Owls comprise two families, both Indian. These families are well distinguished by osteological characters, but present no external differences of any importance.

Skull long and narrow, breadth much less than $\frac{2}{3}$ of length; furcula united to keel of sternum	**Strigidæ**, p. 264.
Skull broad, generally about $\frac{2}{3}$ of length; furcula not in contact with keel of sternum	**Asionidæ**, p. 267.

Family STRIGIDÆ.

Hinder margin of sternum with a single shallow notch on each side; furcula anchylosed to keel of sternum; no manubrium sterni. Skull long and narrow. Second joint of third toe considerably longer than the basal joint. (*Beddard*, Ibis, 1888, p. 340.)

Only two genera are known—*Strix*, which is almost cosmopolitan, and *Heliodilus*, peculiar to Madagascar.

Genus **STRIX**, Linn., 1766 *.

No aigrettes (ear-tufts). Facial disk well developed and large, and entirely surrounded by a ruff of stiff feathers. Bill straight at the base, compressed and weak; nostrils oval. Legs long, the upper part of the tarsus clad with feathers, which pass into bristles on the lower tarsus and upper surface of the toes; middle toe scarcely longer than the inner, middle claw expanded and pectinate on the inner side. Wings very long and pointed, exceeding the tail, 2nd quill longest, 1st subequal; tail moderate.

Key to the Species.

a. Upper surface speckled; tarsus less than 3 inches	*S. flammea*, p. 264.
b. Upper surface with small spots but not speckled; tarsus over 3 inches	*S. candida*, p. 266.

1152. **Strix flammea.** *The Barn-Owl or Screech-Owl.*

Strix flammea, *Linn. Syst. Nat.* i, p. 133 (1766); *Blyth, Cat.* p. 41; *Sharpe, Cat. B. M.* ii, p. 291; *Legge, Birds Ceyl.* p. 164; *Oates, B. B.* ii, p. 167.

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* Newton has shown (Yarrell, ed. 4, i. p. 150, and Ibis, 1876, p. 94) that he type of the Linnæan genus *Strix* is clearly the Tawny Owl (*S. stridula* v. *aluco*), and that Fleming's generic name *Aluco* should be used for *S. flammea* and its allies; but Sharpe (Ibis, 1875, p. 324) has given reasons, which, though not so strong as Prof. Newton's, serve as a sufficient excuse for adhering to the usual nomenclature.

Strix javanica, *Gm. Syst. Nat.* i, p. 295 (1788); *Blyth, J. A. S. B.* xix. p. 513; *Horsf. & M.* i, *Cat.* p. 81; *Jerdon, B. I.* i, p. 117; *Blyth & Wald. Birds Burm.* p. 68; *Butler, S. F.* iii, p. 449; ix, p. 375; *Hume & Dav. S. F.* vi, p. 26; *Ball, S. F.* vii, p. 200; *Cripps, ib.* p. 253; *Hume, Cat.* no. 60; *Scully, S. F.* viii, p. 229; *Vidal, S. F.* ix, p. 34; *Davidson, S. F.* x, p. 290; *Barnes, Birds Bom.* p. 60; *id. Journ. Bom. N. H. Soc.* iii, p. 220; *Hume, S. F.* xi, p. 18; *Oates, in Hume's N. & E.* 2nd ed. iii, p. 93.

Strix indica, *Blyth, Ibis,* 1866, p. 250; 1870, p. 160; *Hume, Rough Notes,* p. 342; *id. S. F.* i, p. 163; iii, p. 37; *Rainey, S. F.* iii. p. 332; *nec Gmel.*

Strix derœpstorffi, *Hume, S. F.* iii, p. 390; iv, p. 283; *id. Cat.* no. 60 bis.

The Indian Screech-Owl, Jerdon; *Kuraya, Karail, Búri churi,* H.; *Bhutum pecha,* B.; *Ghubád,* Mahr.; *Chaao pitta,* Tel.; *Chaao kuravi,* Tam.

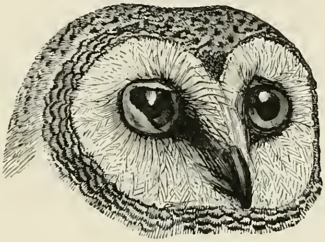

Fig. 72.—Head of *S. flammea,* ½.

Coloration. Facial disk white (occasionally, but rarely, tinged with ferruginous), orbital feathers and a broader spot in front of the eye dark ferruginous; ruff milky white, the ends of the outer feathers generally buff and the tips dark brown; back and upper parts pale grey, tinted or mixed with ochreous, the feathers yellowish buff except at the ends, which are finely vermiculated with black and white, each feather tipped with a small elongate black and white spot or ocellus; quills mottled buff and dark brown, with irregular dark cross-bands; inner webs mostly white; tail buff, mottled, especially at the end, with dark brown and crossed by dark bands, the feathers white beneath; lower parts white or buff, with scattered small dark spots on the breast, abdomen, and wing-lining.

Bill fleshy white, cere flesh-colour; iris black; bare portions of tarsi and feet fleshy brown, claws brown (*Legge*).

Length about 14 inches; tail 5; wing 11·5; tarsus 2·5–2·8; bill from gape 1·5.

I think Sharpe right in uniting the various races of Barn-Owls under one specific heading. At the same time the Indian form, *S. javanica,* is distinguished from that of Western Europe by having much more robust legs and feet, and by being always spotted beneath. But specimens from intermediate localities tend to unite the two forms.

S. derœpstorffii is founded on a very small tawny specimen from the Andaman Islands with the wing only 9·8, the face suffused with ferruginous, and even the spots on the back dark tawny instead of white. No other skin of this race has been obtained, but all the points of difference are repeated in other insular races of *S. flammea*.

Distribution. Almost all tropical and temperate regions. The Barn-Owl is found throughout the greater part of India and Burma, though it is rare in forest-regions, on the higher hills, and in desert tracts. It has not been observed in Tenasserim, and in Ceylon has been obtained only in the north of the island.

Habits, &c. From its habit of haunting roofs of buildings, outhouses, wells, and ruins, the Barn-Owl, though thoroughly nocturnal, is one of the most familiar species of the order. It lives almost entirely on rats and mice. Its cry, a peculiarly weird shriek or screech, chiefly uttered at the pairing-season, sometimes on the wing, has caused the Barn-Owl to be looked upon as a bird of evil omen in many countries. Several of the Indian names mean " bad bird " or " death-bird." The eggs are more oval and less spherical than those of other Owls, white with a creamy tinge, and measure about 1·69 by 1·28. The number varies from 3 to 6; and they are generally deposited in holes in buildings or trees, or occasionally in the ground, and are frequently laid and hatched at intervals of several days. The breeding-season in the Indian Peninsula and Burma is from November to January, in Northern India from February to June.

1153. **Strix candida.** *The Grass-Owl.*

Strix candida, *Tickell, J. A. S. B.* ii, p. 572 (1833); *Jerdon, Ill. Ind. Orn.* pl. 30; *id. B. I.* i, p. 118; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 93; *Sharpe, Cat. B. M.* ii. p. 308; *Blyth & Wald. Birds Burm.* p. 68; *Fairbank, S. F.* iv, p. 253; *Hume & Dav. S. F.* vi, p. 27; *Ball & Hume, S. F.* vii, p. 200; *Hume, Cat.* no. 61; *Reid, S. F.* x, p. 14; *Davison, ibid.* p. 341; *Terry, ibid.* p. 469; *Oates, B. B.* ii, p. 168; *id. in Hume's N. & E.* 2nd ed. iii, p. 95; *Hume, S. F.* xi, p. 18.

Strix longimembris, *Jerdon, Madr. Jour. L. S.* x, p. 86 (1839).

Glaux javanica, *Blyth, Cat.* p. 42 (1849); *nec* Strix javanica, *Gmel.*

Glaux candida, *Blyth, J. A. S. B.* xix, p. 513; *Hume, N. & E.* p. 60.

Scelostrix candida, *Kaup, Tr. Z. S.* iv, p. 248; *Blyth, Ibis,* 1866, p. 251; 1870, p. 160; *Hume, Rough Notes,* p. 345; *A. Anderson, S. F.* iii, p. 388.

Coloration. Disk either white or suffused with pale pinkish ferruginous, a blackish-brown spot in front of each eye; ruff dark brown above, white or buff at the sides of the head and below, some of the feathers often tipped with brown; upper plumage dark brown, each feather with a minute white spot; basal portion of feathers orange-buff,—this colour is conspicuous in places, especially on the neck; smallest wing-coverts orange-buff, with small brown spots; quills buff, tipped with brown, mottled above the tip and with some imperfect dark bars farther up, inner webs mostly white; tail-feathers white, the middle pair generally and the outer webs of the others often buff above, all, except sometimes the outermost, with brown cross-bars; lower parts from chin white or buff, with several scattered brown spots that are seldom or never entirely wanting.

The buff lower parts and the pink disk may be signs of youth (they are not so in *S. flammea*); they are certainly not sexual.

Bill and cere pinky white; irides deep brown; legs and feet blackish brown; claws horny, tinged bluish (*Davison*).

Length about 14; tail 5; wing 13; tarsus 3·2–3·8; bill from gape 1·6.

Distribution. The grassy plains near the base of the Himalayas as far west as Dehra Dún, also parts of Bengal, the Eastern Central Provinces (Bálaghát, Raipur), and Southern India (Nellore, Carnatic, Nilgiris), but not Ceylon. Fairbank thought he saw this Owl in the Bombay Deccan, but I agree with Butler that probably some other species may have been taken for it. To the eastward it has been found in Assam, the Khási hills, Manipur, and at Toungngoo in Burma, and as far as Formosa in one direction, and Queensland in another, but it appears to be rare as a rule and very locally distributed.

Habits, &c. This species has generally been found in long grass, but Davison says that on the Nilgiris he has flushed it from grass scarcely a foot high. Very little is known of its habits. The nest, a very slight one, if any, is made on the ground; the eggs, 4 or 5 in number, are white, and measure about 1·63 by 1·27. They have been taken from October to December.

Family ASIONIDÆ.

Hinder margin of sternum with two deep incisions on each side; furcula free, not attached to the keel of the sternum, imperfect in some genera; a small unforked manubrium (*spina externa*) is present. Skull broad. Basal and second joints of third (middle) toe subequal in length.

The *Asionidæ* may be divided into 3 subfamilies, thus distinguished:—

a. Facial disk and ruff well-marked.	
a'. Ear-orifice smaller than eye; no operculum; middle claw pectinate......	*Photodilinæ*, p. 268.
b'. Ear-orifice larger than eye and furnished with an operculum; middle claw simple	*Asioninæ*, p. 270.
b. Facial disk and ruff ill-marked or obsolete; ear-orifice smaller than eye; middle claw simple	*Buboninæ*, p. 280.

Subfamily PHOTODILINÆ.

The characters are given under the only genus.

Genus **PHOTODILUS**, Geoffr., 1830.

Size small. Disk very distinct, but ruff not complete above the eyes. Bill weak, compressed. Ear-orifice of moderate size, smaller than the eye; no operculum. Wings rounded, 4th and 5th quills longest; tail short. Tarsus feathered throughout; inner toe longer than middle toe; middle claw pectinate on the inside as in *Strix*.

Owing to its well-developed disk and pectinate middle claw, this genus was long placed with *Strix*. Schlegel first, then Blyth, and subsequently, from an examination of the skeleton, Milne-Edwards, showed that the present form should be assigned to the *Asionidæ*, and this has been confirmed by Beddard's additional observations on the anatomy (Ibis, 1890, p. 293). He, however, shows that *Photodilus* is, in several respects, intermediate in structure between the *Strigidæ* and the typical *Asionidæ* *.

There are two species of *Photodilus*, both found within our area.

Key to the Species.

a. Feathers of upper parts chestnut, spotted, but not speckled, with black; inner webs of primaries chestnut barred with black	*P. badius*, p. 268.
b. Feathers of upper parts speckled or mottled with black; inner webs of primaries brown..	*P. assimilis*, p. 269.

1154. **Photodilus badius.** *The Bay Owl.*

Strix badia, *Horsf. Res. Java*, pl. 37 (1824).

Phodilus badius, *Is. Geoff. St.-Hil. Ann. Sci.* xxi, p. 201 (1830); *Blyth, Cat.* p. 41; *Horsf. & M. Cat.* i, p. 80; *Jerdon, B. I.* i, p. 119; *Blyth, Ibis*, 1866, p. 251; *Hume, Rough Notes*, p. 346; *Jerdon, Ibis*, 1871, p. 344; *Hume, S. F.* iii, p. 37; *Sharpe, Cat. B. M.* ii, p. 309; *Blyth & Wald. Birds Burm.* p. 67; *Hume, Cat.* no. 62; *Hume & Inglis, S. F.* ix, p. 245; *Oates, B. B.* ii, p. 166; *Hume, S. F.* xi, p. 18; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, pp. 376, 437.

Phodilus nipalensis, *Gray, apud Hume, S. F.* i, p. 429; iii, p. 37; *nec Gray.*

The Bay Screech-Owl, Jerdon.

Coloration. Broad frontal tract and the facial disk vinous pink;

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* Beddard (*l. c.* p. 294) and Sharpe (P. Z. S. 1879, p. 175) were under the impression that the middle claw in *Photodilus* was not pectinate. The absence of pectination in the single specimen examined by each was probably due to wear; the serration or pectination in good specimens, of which there are now between 30 and 40 in the British Museum, is precisely similar to that of *Strix*.

feathers round eye chestnut; ruff white, the feathers tipped chestnut and black; crown and nape chestnut with, in the middle, a few (usually 3 to 5) buff feathers, each with a small black spot, remainder usually spotless, but sometimes with a small black spot on each feather; sides of neck ochreous buff with black spots; upper plumage slightly paler chestnut than the crown, and with a few black spots, the feathers yellowish buff except at the ends, and the buff showing especially on the neck, the scapulars, and some of the wing-coverts; the black spots on the scapulars and some of the larger wing-coverts double, and with a white spot between, or bordered with white; quills, winglet, and tail-feathers chestnut, with imperfect black bars, the first two or three quills, the outermost feather of each series of primary-coverts, and the terminal feather of the winglet with large white spots on the outer webs; lower parts pale vinous pink, more or less tinged with buff from the base of the feathers showing; some small brown spots, sometimes with white borders, on the breast and abdomen; wing-lining whitish, with a chestnut patch at base of the primaries.

Bill yellowish; iris black; toes brown, claws yellowish.

Length 11·5; tail 3·8; wing 8·75; tarsus 2; bill from gape 1·5.

Distribution. The Eastern Himalayas as far west as Nepal at low elevations (perhaps farther west, for Mr. R. Thompson told Mr. Hume he had shot this species in Dehra Dún), also Assam, Cachar, Manipur, Burma (where it is rare), and the Malay countries, including Java and Borneo.

Habits, &c. A very nocturnal bird, living in forest, and consequently very rarely seen. Nothing is known of the nidification.

1155. **Photodilus assimilis.** *The Ceylon Bay Owl.*

Phodilus badius, *Hume, S. F.* i, p. 429; *Whyte, S. F.* v, p. 201; *nec* Strix badia, *Horsf.*

Phodilus assimilis, *Hume, S. F.* v, p. 138; *id. Cat.* no. 62 bis: *Whyte, S. F.* v, p. 353; *Legge, Birds Ceyl.* p. 161, pl. v.

This is very similar to the last, but darker above, the chestnut colour not being uniform on the crown, but marked with black shaft-lines, enclosing pale rufous spots, and on the upper parts generally the chestnut is much mottled with black, the buff on the back and scapulars is more marked, and there is a large buff patch formed by the median wing-coverts; the black bars on the quills and tail-feathers are more numerous and extend quite across the feathers, and are nearly or quite as broad as the chestnut bars intervening; the inner webs of the primaries are brown instead of chestnut; the patch on the wing-lining at the base of the primaries is dark brown, and the spots on the lower surface are double, one behind the other on the shaft of each feather.

Bill greenish white; iris dark brown; feet pale whitish green, claws pale ash (*Whyte*); cere probably olivaceous (*Legge*).

Dimensions about the same as those of *P. badius.*

Distribution. Only found as yet in the Ceylon hills, near Kandy, where this bird appears rare, as very few specimens have hitherto been obtained.

Habits, &c. Like *P. badius* this is a thoroughly nocturnal species, living in dense forest. It appears to breed about the end of the year; makes a nest of dry twigs, moss, and feathers in a hollow tree, and lays, in the only instance yet recorded, 3 eggs.

Subfamily ASIONINÆ.

Ear-orifice large, exceeding the eye in size, lunate or ovoid in shape, and furnished with an operculum. Facial disk well-marked and nearly as high above the eyes as below them; ruff distinct.

The Owls of this subfamily are of moderate or large size, with feathered tarsi. Two genera are Indian.

Key to the Genera.

a. Aigrettes present: 2nd quill longest; iris yellow.	Asio, p. 270.
b. No aigrettes: 3rd, 4th, or 5th quill longest; iris dark	Syrnium, p. 273.

Genus **ASIO**, Brisson, 1760.

Aigrettes or ear-tufts present, but varying in size; ear-orifice very large, furnished with an operculum. Bill short and strong, the part covered by the cere is longer than that beyond the cere measured in a straight line from base to front. Tarsus and upper surface of toes thickly covered with feathers. Ruff complete or nearly so; facial disk well-marked, and extending nearly as far above the eye as beneath it. Wings long and pointed, 2nd quill longest, 3rd subequal; tail moderate, rounded. Iris yellow.

Key to the Species.

a. Transverse dark markings as well as longitudinal stripes on abdomen	*A. otus*, p. 270.
b. Only longitudinal shaft-stripes on abdomen .	*A. accipitrinus*, p. 271.

1156. **Asio otus.** *The Long-eared Owl.*

Strix otus, *Linn. Syst. Nat.* i, p. 132 (1766).

Otus vulgaris, *Fleming, Brit. An.* p. 56 (1828); *Horsf. & M. Cat.* p. 79; *Jerdon, B. I.* i, p. 125; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 17; xli, p. 231; *Hume, Rough Notes,* p. 361; *Jerdon, Ibis,* 1871, p. 345; *Doig & Butler, S. F.* vii, p. 503.

Asio otus, *Lesson, Man. d'Orn.* i, p. 116; *Blyth, Cat.* p. 35; *Sharpe, Cat. B. M.* ii, p. 227; *Hume, Cat.* no. 67; *Biddulph, Ibis,* 1881, p. 45; *Scully, ibid.* p. 424; *Barnes, Birds Bom.* p. 63; *St. John, Ibis,* 1889, p. 154.

Coloration. Lores and anterior portion of disk whitish, bristly ends of feathers black; round eye and streak from front of eye to gape blackish brown; posterior portion of disk tawny, tinged with brown; ruff dark brown inside, speckled brown, white, and buff outside; aigrettes blackish brown, with the basal outer border buff, the inner border white; upper parts dark brown, mottled with white on the crown, back, rump, scapulars, wing-coverts, and tertiaries, the buff bases of the feathers showing here and there throughout; the neck is buff, broadly streaked with dark brown, the dark streaks slightly mottled at their edges; quills tawny buff, the terminal half greyish, mottled with brown, and barred with mottled dark brown; tail-feathers buff, mottled with dark brown near the ends and with dark bars throughout; lower parts buffy white, with broad brown shaft-stripes, and with imperfect, narrow, wavy and broken cross-bars on the abdomen only, some buff from the bases of the feathers showing; tibial and tarsal feathers and under tail-coverts unstriped buff; wing-lining buffy white, with a brown patch at the base of the primaries.

Bill blackish brown: cere fleshy; irides bright yellow to orange; claws horny black, paler at base (*Hume*).

Length 14·5; tail 6·5; wing 11·5; tarsus 1·6; bill from gape 1.

Distribution. The Palæarctic region, visiting N. Africa, the Himalayas, and North-western India in winter. This Owl probably breeds in the higher Himalayan forests, and has been obtained from Kashmir to Sikhim. It is not rare in winter in the Punjab, and has been collected in Sind by Butler and Doig, in Cutch by Stoliczka.

Habits, &c. The Long-eared Owl is migratory in Northern India, but not throughout its range; it is found in woods and feeds on mice, insects, and small birds. It breeds usually in the deserted nest of another bird, often a Buzzard's or Crow's, and lays about 4 white eggs in March or April.

1157. **Asio accipitrinus.** *The Short-eared Owl.*

Strix accipitrina, *Pall. Reis. Russ. Reichs*, i, p. 455 (1771).
Strix brachyotos, *Forster, Phil. Trans.* lxii, p. 384 (1772).
Asio brachyotus, *Blyth, Cat.* p. 35; *Scully, Ibis,* 1881, p. 425.
Otus brachyotus, *Horsf. & M. Cat.* i, p. 79; *Jerdon, B. I.* i. p. 126; *Hume, Rough Notes,* p. 364; *A. Anderson, P. Z. S.* 1872, p. 81; *Butler, S. F.* iii, p. 449; v, p. 226; *Hume & Bourd. S. F.* iv, p. 372.
Ægolius brachyotus, *Blyth, Birds Burm.* p. 66.
Asio accipitrinus, *Sharpe, Cat. B. M.* ii, p. 234; *Wardl. Ramsay, Ibis,* 1877, p. 454; *Hume & Dav. S. F.* vi, p. 30; *Davidson & Wend. S. F.* vii, p. 75; *Hume, ibid.* p. 162; *Butler, ibid.* p. 180; ix, p. 376; *Ball, S. F.* vii, p. 200; *Cripps, ibid.* p. 253; *Hume, Cat.* no. 68; *Davison, S. F.* x, p. 343; *Biddulph, Ibis,* 1881, p. 45; *Oates, B. B.* ii, p. 163; *Barnes, Birds Bom.* p. 64; *Hume, S. F.* xi, p. 20.

Coloration. Facial disk white, more or less tinged with tawny buff, especially behind the eye; orbital feathers and tips of loral shafts black; ruff rich buff, streaked and speckled with dark brown; upper plumage throughout buff, broadly streaked with dark brown, the colours somewhat intermixed and mottled on the scapulars, tertiaries, and wing-coverts; some large buff or white spots on the scapulars, greater and median coverts; primaries buff, with the tips and two or three irregular cross-bands near the end dark brown, the brown bands occurring higher on the outer than on the inner webs; secondaries banded buff and brown, basal portion of inner webs of all quills white: tail banded tawny buff and dark brown; the buff in the middle feathers mixed with brown; lower parts buff, longitudinally streaked with brown shaft-stripes, broadest on the breast, growing narrow behind and disappearing on the legs, lower abdomen, under tail-coverts, and under wing-coverts; a brown patch on the latter at the base of the primaries.

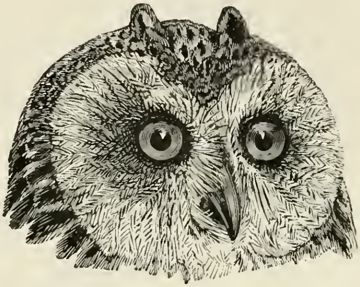

Fig. 73.—Head of *A. accipitrinus*, $\frac{1}{2}$.

In some skins from North-western Indian and the desert, the parts usually buff are nearly white, especially the lower surface.

Bill and claws blackish; irides deep yellow.

Length 15; tail 5·75; wing 12; tarsus 1·6; bill from gape 1·2.

Distribution. Almost world-wide except in high latitudes. A migratory bird, that may be found during the cold season in all parts of the empire in suitable localities; common in the grass-plains of Northern India, less common to the southward and, so far as is known, in Burma, and not hitherto recorded from Ceylon or Tenasserim.

Habits, &c. This Owl is usually in India found in long grass, and is often seen when grass-plains are beaten for game. Occasionally it haunts low bush or cultivation. It lives mainly on small mammals, which it hunts, chiefly by night, but sometimes by day. It flies well and strongly, and was formerly a favourite quarry for trained Falcons. It does not breed in India, but farther north lays about 4 eggs on the ground.

Genus **SYRNIUM**, Savigny, 1810.

No aigrettes (ear-tufts); ear furnished with an operculum. Bill stout. Tarsus thickly feathered throughout; toes feathered above in all Indian species to base of last phalanx; claws strong. Ruff narrow, incomplete above; facial disk well developed, extending almost as far above the eyes as below. Wings rounded, 3rd, 4th, or 5th quill longest; tail of moderate length, rounded. Irides always dark.

The Owls of this genus are of moderate size, and are generally found in trees during the day; all are thoroughly nocturnal. In Sharpe's 'Catalogue' 27 species were enumerated, scattered over the greater part of the world, and two or three have since been described; six are Indian.

Key to the Species.

- *a*. Lower surface with longitudinal as well as transverse markings.
  - *a'*. All tail-feathers with pale cross-bands: wing 12 .... *S. nivicola*, p. 273.
  - *b'*. Middle tail-feathers not banded: wing 13·5 .... *S. biddulphi*, p. 274.
- *b*. Lower surface with transverse bars alone.
  - *c'*. Bars on abdomen $\frac{1}{4}$ inch or more apart.
    - *a''*. Upper parts mottled with black and white .... *S. ocellatum*, p. 277
    - *b''*. Upper parts with white spots, but not mottled .... *S. seloputo*, p. 278.
  - *d'*. Bars on abdomen much less than $\frac{1}{4}$ inch apart .... *S. indrani*, p. 275.
- *c*. Lower surface with longitudinal shaft-stripes alone .... *S. butleri*, p. 279.

1158. **Syrnium nivicola.** *The Himalayan Wood-Owl.*

Mesomorpha nivicola, *Hodgs. in Gray's Zool. Misc.* p. 82 (descr. nulla).

Syrnium nivicolum, *Hodgs., Blyth, J. A. S. B.* xiv, pp. 185, 550 (1845); xv, p. 9; xvi, p. 464; *id. Cat.* p. 41; *Horsf. & M. Cat.* i, p. 84; *Jerdon, B. I.* i, p. 124; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 16; *Hume, Rough Notes*, p. 359; *Jerdon, Ibis*, 1871, p. 345; *Sharpe, Cat. B. M.* ii, p. 250; *Hume, Cat.* no. 66; *id. S. F.* ix, p. 37; *C. H. T. Marshall, Ibis*, 1884, p. 407.

Kashi-op tak-pum, Lepcha; *Uko*, Bhot.

Coloration. Loral feathers white or fulvous, with black bristly ends; facial disk greyish or fulvous, white-shafted, indistinctly barred with brown; a white or fulvous supercilium; ruff indistinct, dark brown, more or less banded and spotted with white or fulvous; middle of crown dark brown, uniform in old birds; upper parts dark brown, vermiculated and speckled with whitish or fulvous, with larger whitish or buff markings on the hind-neck, and large white or buff spots on the outer webs of the scapulars and of the median primary wing-coverts; quills brown, with mottled tips and broad whitish bars, more or less mottled, interrupted at the shafts, and closer together on the secondaries; tail-feathers brown, mottled at the tips and sometimes on the outer edges, and all with pale mottled or clouded cross-bands; lower parts white or yellowish fulvous, pure in the middle of the throat, elsewhere broken up by dark brown shaft-stripes and cross-bands, closer together on the chin and breast; feathers on legs and toes with brown markings forming irregular bars.

Young birds are somewhat indistinctly barred with brown and fulvous almost throughout.

Bill pale fleshy yellow; cere brown, ill-marked; irides dark brown; ends of toes dull plumbeous, claws brown (*Hume*).

Length about 17; tail 7; wing 12; tarsus 2; bill from gape 1·35.

Distribution. Throughout the Himalayas from Murree to Sikhim, and probably farther east at considerable elevations, 6000–14,000 feet. This Owl is also found in China. Birds from Sikhim and Nepal are always fulvous and rufescent, those from the N.W. Himalayas greyish, the difference far exceeding that between *S. newarense* and *S. indrani*, and very like that between *Caprimulgus europæus* and *C. unwini*.

Habits, &c. Very little known. The cry, according to Davison, is a double hoot. The nest and eggs have not been observed, but probably resemble those of the allied European species *S. aluco*, the Tawny Owl, which lays 3 or 4 eggs in the hollow of a tree, or sometimes amongst rocks or in an old rook's nest. Another allied form is *S. davidi* from Moupin (Sharpe, Ibis, 1875, p. 256).

1159. **Syrnium biddulphi.** *Scully's Wood-Owl.*

Syrnium biddulphi, *Scully, Ibis*, 1881, p. 423, pl. xiv; *id. S. F.* x, p. 95.

Similar to the last, but rather larger, still greyer than the north-western variety of *S. nivicola*, and intermediate in markings between that species and *S. aluco*, there being a tendency to dark median bars on the hind-neck, back, and scapulars, though less than in the European form. The vermiculation or mottling of the upper parts is finer than in *S. nivicola*, and the present species may be immediately distinguished by having the middle tail-feathers and the outer webs of the next pair mottled throughout and almost or entirely destitute of cross-bands.

Bill green, yellow at tip; cere olive; iris dark brown; toe-scales pale green; claws black, slaty at base (*Scully*).

Length about 18·5; tail 8·5; wing 13·5; tarsus 2·5; bill from gape 1·45.

Distribution. Two specimens were obtained by Scully at Gilgit in forest. I find two more in the Hume collection—one from Pesháwar, the other from Murdan, close to Pesháwar. It was probably this bird that was seen in Afghanistan by Wardlaw Ramsay (Ibis, 1880, p. 48) and taken for *S. nivicola*. Nothing is known of the habits.

1160. **Syrnium indrani.** *The Brown Wood-Owl.*

Strix indranee, *Sykes, P. Z. S.* 1832, p. 82.
Ulula newarenis, *Hodgson, As. Res.* xix, p. 168 (1836).
Bulaca newarensis, *Hodgson, J. A. S. B.* vi, p. 372; *Blyth, Ibis*, 1866, p. 252; *Hume, Rough Notes*, p. 348; *id. N. & E.* p. 60; *Blanford, S. F.* v, p. 483.
Bulaca monticola, *Jerdon, Mad. Jour. L. S.* xiii, p. 167 (1844).
Syrnium newarense, *Gray, Gen. B.* i, p. 39, pl. 14; *Jerdon, B. I.* i, p. 122; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 16; *Jerdon, Ibis*, 1871, p. 344; *Sharpe, Cat. B. M.* ii, p. 281; *Hume, Cat.* no. 64; *Scully, S. F.* viii, p. 229; *Sharpe, P. Z. S.* 1887, pp. 434, 471; *Hume, S. F.* xi, p. 19; *Oates in Hume's N. & E.* 2nd ed. iii, p. 116.
Bulaca indranee, *Blyth, J. A. S. B.* xvi, p. 463; *Hume, Rough Notes*, p. 347.
Syrnium indrani, *Blyth, Cat.* i, p. 40; *Horsf. & M. Cat.* i, p. 83; *Jerdon, B. I.* i, p. 121; *Hume, S. F.* i, p. 429; *Legge, S. F.* ii, p. 342; *Butler, S. F.* iii, p. 439; ix, p. 375; *Blyth, Birds Burm.* p. 67; *Sharpe, Cat. B. M.* ii, p. 282; *Fairbank, S. F.* iv, p. 253; *Hume & Dav. S. F.* vi, p. 27; *Hume, Cat.* no. 63; *Vidal, S. F.* ix, p. 35; *Legge, Birds Ceyl.* p. 155, pl. v; *Davison, S. F.* x, p. 342; *Taylor, ibid.* p. 455; *Marshall, Ibis*, 1884, p. 407; *Sharpe, P. Z. S.* 1887, p. 477; *Barnes, Birds Bom.* p. 62.
Syrnium ochrogenys, *Hume, S. F.* i, p. 431 (1873).
Syrnium hodgsoni, *Scully, S. F.* viii, p. 231 (1879).

The Brown Wood-Owl, The Nepal Brown Wood-Owl, Jerdon; *Bulaka*, Nepal; *Mik-dab-bru*, Lepcha; *Ulama*, Cing.

Coloration. Bristly loral feathers mixed black and white; feathers around orbits black or blackish brown, passing into whitish, whity brown, brownish buff, or even orange-buff, more or less barred with dusky, on the facial disk, a white or whitish superciliary band continuous across the forehead; ruff proper and chin chocolate-brown, upper parts the same; crown and nape often much darker than the back. Scapulars and wing-coverts more or less barred paler, some of the outer scapulars white with narrow brown bars; rump and upper tail-coverts also barred with white or whitish in some birds, and the back barred paler in young individuals; quills with pale cross-bars, not always corresponding on the two webs, much closer together on the secondaries; tail-feathers brown, with narrow pale brown or white bars and white tips; throat pure white; remainder of lower parts, except chin, white or fulvous, closely barred with dark brown, most closely on the legs and toes; the breast in some old birds (chiefly Himalayan) nearly or quite uniformly brown.

Young birds have broad whitish edges to the feathers, especially on the crown and nape; all the upper parts are barred; the lower parts are white at first, and gradually assume the barring.

Bill greenish horny, bluish near base; cere plumbeous; irides deep brown (yellow irides have twice been recorded); ends of toes pale leaden; claws dusky plumbeous, paler at their bases. Toes feathered above, except close to the claws.

Length of Himalayan birds about 21 inches, tail 8–9·5, wing 13·3 to 16·6, tarsus 2·3 to 2·75, bill from gape 1·45–1·6; length of South-Indian and Ceylon birds about 18·5, tail 6·5–8, wing 11·75–13·5. Males average less than females.

I do not think the Peninsular and Ceylon form, *S. indrani*, can be separated from the Himalayan *S. newarense*, except as a race or subspecies. The Southern race is considerably smaller, as usual, and the facial disk is as a rule distinctly ochreous, whilst in the Himalayan bird it is whitish; but the difference is not absolutely constant, as Hume has shown, and ochreous or rufous coloration is a common form of variation in Owls. Very often, too, the superciliary band is less pure white, and the crown and nape are darker and paler in the Southern than in the Northern variety. Birds from the Assam hills and Burma resemble those from Southern India in colour. The Malaccan *S. maingayi* (Hume, S. F. vi, p. 27) is rather more distinct, but only entitled, I think, to subspecific separation.

Distribution. Throughout the Himalayas from near the base to a considerable elevation (13,000 feet in Sikhim), also on the Western Gháts from Mahableshwar southward and throughout Ceylon. Blyth received a specimen from Goomsur, and there is one from the Shevroy hills in the Madras Museum. To the eastward this bird has been found in the hills south of Assam, in Manipur, and, very rarely, in Burma, a specimen from the Thounggyen valley, east of Moulmein, having recently been sent to me by Mr. Hauxwell, and I find another from the same neighbourhood, collected by Mr. Limborg, in the Tweeddale collection. Swinhoe obtained this species in Formosa.

Habits, &c. A forest bird, keeping much to the higher hill-ranges, except in Ceylon. The ordinary call is, according to Davison, a quadruple hoot; according to Legge a sound like *to-whōōō*: the diabolical shrieks attributed to this species by Layard and others are probably produced by another Owl. Legge has given an excellent account of the bird in captivity. His captives devoured small birds, lizards, and fish with equal zest. The Owl grasped its food, just as a parrot does, in one foot, with the inner toe turned backwards, and after nibbling at various parts, as if to taste, jerked the whole headforemost into its mouth and swallowed it. Hume found a nest of sticks belonging to this species on June 6th, in a precipitous valley near Simla, placed on a rocky shelf, and containing three very young birds; and Mandelli obtained a white subspherical egg, measuring 2·07 by 1·76, from a female on March 6th. No more is known of the breeding.

1161. **Syrnium ocellatum.** *The Mottled Wood-Owl.*

Syrnium ocellatum, *Less. Rev. Zool.* 1839, p. 289; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 167; *Sharpe, Cat. B. M.* i, p. 263; *Butler, S. F.* v, p. 208; vii, p. 179; ix, p. 376; *Davidson & Wend. S. F.* vii, p. 75; *Ball, ib.* p. 200; *Hume, Cat.* no. 65; *Vidal, S. F.* ix, p. 35; *Reid, S. F.* x, p. 14; *Hume, ibid.* p. 343; *Barnes, Birds Bom.* p. 62; *id. Journ. Bom. N. H. Soc.* iii, p. 220; *Littledale, Jour. Bom. N. H. Soc.* i, p. 195; *Oates in Hume's N. & E.* 2nd ed. iii, p. 115.

Bulaca sinensis, *apud Jerdon, Mad. Jour. L. S.* x, p. 88; *nec Lath.*

Syrnium sinense, *apud Blyth, J. A. S. B.* xi, p. 162; *id. Cat.* p. 40; *Horsf. & M. Cat.* i, p. 82; *Jerdon, B. I.* i, p. 123; iii, p. 870; *McMaster, J. A. S. B.* xl, pt. 2, p. 207.

Bulaca ocellata, *Blyth, Ibis,* 1865, p. 29; 1866, p. 253; *King, J. A. S. B.* xxxvii, pt. 2, p. 213; *Hume, Rough Notes,* p. 353; *id. N. & E.* p. 61; *A. Anderson, P. Z. S.* 1872, p. 80; *Adam, S. F.* i, p. 369; *Fairbank, S. F.* iv, p. 253.

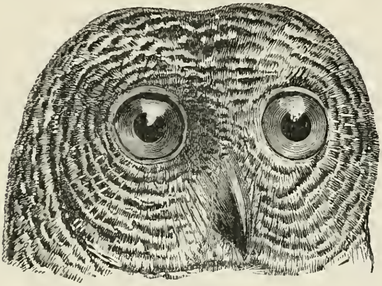

Fig. 74.—Head of *S. ocellatum*, $\frac{1}{2}$.

Coloration. Loral feathers mixed black and white, a vertical ferruginous stripe behind the eye, remainder of facial disk greyish white, barred with dusky and white-shafted; forehead and supercilia white with black bars; ruff chocolate-brown, narrow and inconspicuous; feathers of upper parts ferruginous tawny except at the ends, those of the crown, nape, and sides of neck tipped black, spotted or barred with white, those of the rest of the upper surface finely mottled black and white, with broader wavy black bars and shaft-stripes; terminal portion of quills dark brown, with numerous broad pale clouded and mottled cross-bands and mottled tips, basal portion buff, sometimes with dark cross-bars; upper surface of outer web much mottled; middle tail-feathers mottled and with irregular cross-bands, buff towards the base, becoming dark near the end; outer tail-feathers the same near the tip and on the outer web, but buff with dark bands inside towards the base; point of chin greyish white, the feathers very bristly, followed by dark brown buff feathers with white edges and chestnut at the base; middle of throat white; lower parts from throat white, tinged with ochreous buff, and with narrow blackish cross-bars, which are much closer together on the legs and toes.

Bill black; eyelids orange; irides dark brown; claws dusky; soles of the feet yellowish (*Jerdon*).

Length about 18·5; tail 8; wing 14; tarsus 2·25; bill from gape 1·6.

Distribution. Throughout the Peninsula of India as far south as the Carnatic and the base of the Nilgiris, at all events, but not in Ceylon. To the northward the range extends in places to the Sutlej, and perhaps to the Indus on the west, to the base of the Himalayas on the north, and to Lower Bengal on the east, but not beyond.

Habits, &c. The Mottled Wood-Owl is chiefly found in well-wooded districts, but not in forests, and is especially partial to mango-topes and large trees about villages. It lives chiefly on small mammals, such as rats, mice, and squirrels, and its call is a loud harsh hoot. It breeds in the N.W. Provinces and Punjab in February and March, but in the Central Provinces from November till January, and lays usually 2 eggs, occasionally 3, in a cavity or hollow of some large tree, very often a mango, banyan, or peepul, there being little or no lining. According to Anderson it frequently builds a nest, but this is not confirmed by other observers. The eggs are very round ovals, white or slightly creamy, measuring about 1·99 by 1·67.

1162. **Syrnium seloputo.** *The Malayan Wood-Owl.*

? Strix sinensis, *Lath. Gen. Syn., Supp.* ii, p. 368; *id. Ind. Orn. Suppl.* p. xvi (1801).
Strix seloputo, *Horsf. Tr. Linn. Soc.* xiii, p. 140 (1821).
Strix pagodarum, *Temm. Pl. Col.* pl. 230 (1823).
Syrnium seloputo, *Horsf. & M. Cat.* i, p. 84; *Hume, S. F.* ii, p. 150; iii, p. 37; *id. Cat.* no. 65 bis; *Blyth & Wald. Birds Burm.* p. 67; *Hume & Dav. S. F.* vi, p. 28.
Bulaca sinensis, *Blyth, Ibis,* 1865, p. 29; 1866, p. 253; *Hume, Rough Notes,* p. 357.
Syrnium sinense, *Sharpe, Cat. B. M.* ii, p. 261; *Oates, B. B.* ii, p. 164; *id. in Hume's N. & E.* 2nd ed. iii, p. 114.

Coloration. Facial disk, including lores and forehead, dull ochreous buff; ruff narrow, dark brown; upper parts chocolate-brown, darker on the head and nape and spotted throughout with white spots and imperfect bars of irregular size and shape, more or less surrounded by black rims; outer scapulars white, with brown cross-bars; quills and tail-feathers brown, with pale cross-bands and tips, the cross-bands growing broader and becoming buff on the inner webs of the quills towards the base; chin buff, middle of throat white; lower surface from throat, with sides of neck and under wing-coverts, white, with dark brown cross-bars, narrow on the abdomen and close together on the legs.

Young with the upper plumage mostly banded white and dark brown.

Bill and cere greenish black; irides dark brown; claws and visible portion of toes horny (*Davison*).

Length about 18·5; tail 7·5; wing 13·5; tarsus 2·25; bill from gape 1·5.

Distribution. Pegu, Tenasserim, Siam, Cochin China, the Malay Peninsula, Java, and probably Sumatra and Borneo. The reported occurrence of this Owl in Assam and the Nicobar Islands is probably due to error.

Habits, &c. This is more of a forest bird than *S. ocellatum*, but keeps similarly to large trees, and the young birds were found on bare wood in the fork of a peepul tree by Oates in March and April. The hoot is said by Davison to be very peculiar, commencing with a sort of rolling *hoo-hoo-hoo* and ending with a prolonged and deep-drawn *hoo*. A bird killed by this naturalist had fed upon beetles.

This bird does not agree well with Latham's description of *Strix sinensis*, and as it is not known to occur in China the name is objectionable.

1163. **Syrnium butleri.** *Hume's Wood-Owl.*

Asio butleri, *Hume, S. F.* vii, p. 316; *id. Cat.* no. 67 bis.
Syrnium butleri, *Tristram, S. F.* viii, p. 417.

Coloration. Facial disk white, tinged with tawny behind, some of the loral feathers black-tipped; ruff greyish brown, the feathers tipped with cream-colour or buff; upper plumage brown, banded irregularly, clouded, and intermixed with dull brownish buff, a few large white spots on the secondary, median, and greater coverts; quills and tail-feathers banded brown and brownish buff above, brown and whity brown beneath, tips of the quills mottled greyish brown; tips of tail-feathers white, the buff bars on the median tail-feathers replaced by irregularly-shaped spots; lower parts creamy white, the feathers edged with rufous brown, and with narrow brown shaft-stripes on the breast and upper abdomen; wing-lining white, a brown patch at the base of the primaries.

Length 14, or rather less; tail 5·75; wing 10; tarsus 2; bill from gape 1·2.

The tarsi, feet, and claws are very small. In the wing the 3rd quill is longest and the 4th very little shorter.

Distribution. Only two specimens are known—one, the type in the Hume collection, was obtained, there is every reason to believe, at Omára on the Mekran coast; the other was procured by Canon Tristram from Mt. Sinai. This Owl is somewhat intermediate between *Syrnium* and *Asio*, but appears more allied to the former, as it has a rounded wing and no aigrettes.

Subfamily BUBONINÆ.

Ear-orifice not exceeding the eye in size; no operculum. Facial disk generally ill-marked, and never extending as far above the eye as below; ruff nearly or quite obsolete.

This subfamily is much larger than the last two, and contains several Indian forms, varying in size from the great Eagle-Owls to species scarcely larger than a Skylark.

Key to the Genera.

a. Aigrettes well developed.	
a'. Size large; wing exceeding 13.	
a''. Tarsi partly or wholly naked	Ketupa, p. 280.
b''. Tarsi feathered throughont.	
*a*³. 1st quill longer than 7th; irides yellow.	Bubo, p. 283.
*b*³. 1st quill shorter than 10th; irides brown.	Huhua, p. 287.
b'. Size small; wing under 8................	Scops, p. 290.
b. Aigrettes small or wanting.	
c'. Cere not inflated, colour mainly or wholly white	Nyctea, p. 289.
d'. Cere inflated; colour brown or rufous.	
c''. Plumage more or less spotted with white above..............................	Athene, p. 300.
d''. Plumage barred above (in Indian forms).	Glaucidium, p. 304.
e''. Plumage uniformly brown above (in Indian forms)	Ninox, p. 309.

Genus **KETUPA**, Lesson, 1831.

The Fish-Owls comprise three species, all occurring within Indian limits. They are large and powerful birds, with the tarsus partly or wholly naked and granular, much like that of the Osprey, and the soles of the feet covered with prickly scales. The claws are large, well curved, each with a sharp cutting-edge beneath, and the middle claw with a sharp keel on the inside also.

Aigrettes are present, long and pointed. The bill is large and strong. The facial disk is ill-marked, especially above. The wings are rounded, and do not reach the end of the tail, 4th quill generally the longest, 3rd and 5th subequal; tail moderate.

Key to the Species.

a. Tarsus naked behind and usually more than halfway up in front.	
a'. Lower surface with shaft-stripes and finely barred across throughout	*K. zeylonensis*, p. 281.
b'. Lower surface with shaft-stripes, but without cross-barring	*K. javanensis*, p. 283.
b. Tarsus partly feathered behind, and usually more than halfway down in front	*K. flavipes*, p. 282.

1164. **Ketupa zeylonensis.** *The Brown Fish-Owl.*

Strix zeylonensis, *Gmel. Syst. Nat.* i, p. 287 (1788).
Strix leschenaultii, *Temm. Pl. Col.* pl. 20 (1824).
Strix dumeticola, *Tickell, J. A. S. B.* ii, p. 571 (1833).
Strix hardwickii, *Gray in Hardw. Ill. Ind. Zool.* ii, pl. 31 (1833–4).
Cultrunguis nigripes, *Hodgson, J. A. S. B.* v, p. 364 (1836).
Ketupa ceylonensis, *Gray, Gen. B.* i, p. 38; *Blyth, Cat.* p. 37; *Horsf. & M. Cat.* i, p. 77; *Jerdon, B. I.* i, p. 133; *Blyth, Ibis,* 1866, p. 254; *Hume, Rough Notes,* p. 379; *Hume, S. F.* i, p. 431; *Sharpe, Cat. B. M.* ii, p. 4; *Blyth & Wald. Birds Burm.* p. 66; *Armstrong, S. F.* iv, p. 300; *Blanford, S. F.* v, p. 245; *Fairbank, ibid.* p. 392; *Hume & Dav. S. F.* vi, pp. 33, 497; *Ball, S. F.* vii, p. 201; *Cripps, ibid.* p. 255; *Hume, Cat.* no. 72; *Legge, Birds Ceyl.* p. 127; *Vidal, S. F.* ix, p. 36; *Butler, ibid.* p. 376; *Reid, S. F.* x, p. 15; *Davison, ibid.* p. 343; *Oates, B. B.* ii, p. 148; *id. in Hume's N. & E.* 2nd ed. iii, p. 96; *Barnes, Birds Bom.* p. 68; *Hume, S. F.* xi, p. 21; *Littledale, Journ. Bom. N. H. Soc.* i, p. 195.

Amrai ka ghughu, Ulu, H.; *Bhutum,* Beng.; *Húdú,* Assamese; *Bakamuna,* Cing.; *Tee-dote,* Burm.

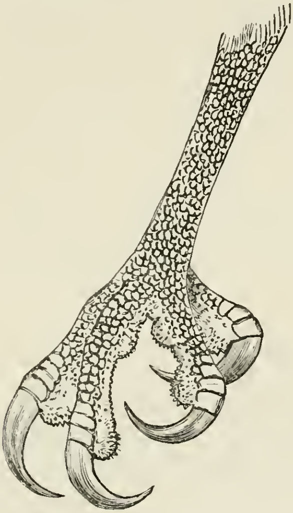

Fig. 75.—Left foot of *K. zeylonensis,* ½.

Coloration. Lores white or fulvous, with black shafts; cheeks and ear-coverts the same, but more fulvous; upper plumage throughout rufescent brown to dull rufous, with broad black shaft-stripes; lower back and rump with narrow shaft-lines; the scapulars and tertiaries much mottled, and the neck-feathers very often marked with close and subobsolete cross-bars; outer webs of outer scapulars white, and some white or buff spots on the larger and median wing-coverts; quills and tail-feathers dark brown, with paler mottled whity-brown bands and tips; throat white; remainder of lower parts whitish, narrowly and closely transversely barred with brownish rufous, each feather, including those of the throat, with a fusiform dark brown shaft-line; larger under wing-coverts white, with dark brown ends.

Bill dusky yellow-green, dark brown on the culmen; cere pale dusky green; iris bright yellow; legs dusky yellow (*Oates*).

Length about 22; tail 8; wing 16; tarsus 2·75; bill from gape 2.

Males are generally smaller than females, and Himalayan birds are considerably larger than those from Southern India, Ceylon, and Southern Burma.

Distribution. A common bird throughout India, Ceylon, and Burma in well-wooded tracts near the sea, rivers, or large pieces of water. This Owl is rare in the Himalayas, where it is replaced by the next species; but it has been found on the tops of the Nilgiri and Palni hills in Southern India. It is, of course, rare or wanting in the drier parts of Rajputana, the Punjab, Sind, &c.; but I shot one by a stream in the Western Sind hills. It does not appear to range south of Tenasserim, though it occurs to the eastward in China and far to the west near Acre in Palestine. It has not yet been observed in Persia or Arabia.

Habits, &c. The Common Indian Fish-Owl generally passes the day in a thick tree, and wings its way at sunset to the water's edge to search for food. It lives chiefly on fish and crabs, but also kills birds and small mammals at times. It has a loud dismal cry, like *haw, haw, haw, ho.* It breeds from December to March, and lays usually two white broad oval eggs, measuring about 2·38 by 1·88, in a hollow tree, the deserted nest of a Fishing-Eagle, or occasionally on a ledge of rock, a small stick nest being made in the latter case.

1165. **Ketupa flavipes.** *The Tawny Fish-Owl.*

Cultrunguis flavipes, *Hodgson, J. A. S. B.* v, p. 364, pl. 25 (1836).
Ketupa flavipes, *Gray, Gen. B.* i, p. 38; *Blyth, Cat.* p. 37; *Horsf. & M. Cat.* i, p. 76; *Jerdon, B. I.* i, p. 135; *id. Ibis*, 1871, p. 346; *Bulger, Ibis*, 1869, p. 155; *Hume, Rough Notes*, p. 385; *id. S. F.* iii, pp. 327, 416; xi, p. 21; *id. Cat.* no. 73; *Sharpe, Cat. B. M.* ii, p. 5; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 12.

Lak-kyo-o-mung (the Kyo-o-calling Devil), Lepcha.

Coloration. Lores white; cheeks and ear-coverts orange or brownish buff, all with black shafts; feathers of the upper parts with broad blackish-brown median bands and rich orange-buff edges, the orange-buff in parts forming indentations or spots on the dark brown; outer scapulars and some of the larger wing-coverts with the outer webs chiefly buff; quills and tail-feathers dark brown, with buff bars and tips; lower parts rich orange-buff, with dark brown shaft-stripes, broadest on the breast; usually a white patch in the middle of the throat.

Bill horny black; cere dirty greenish; irides gamboge-yellow; legs yellowish grey (*Jerdon*). Bill greenish horny (*Chennell*).

Length about 24; tail 9; wing 18; tarsus 3; bill from gape 1·8. The tarsi covered with downy feathers for some distance below the upper end behind, and more than halfway down in front.

Distribution. Throughout the lower Himalayas as far west as Kashmir, at elevations not exceeding about 5000 feet, also in the ranges immediately south of the Assam valley, and in China.

Habits, &c. This fine Owl is found on the banks of Himalayan rivers, and like *K. zeylonensis* is said to subsist principally on fish and crabs. The nest and eggs do not appear to have been described.

1166. **Ketupa javanensis.** *The Malay Fish-Owl.*

Strix ketupu, *Horsf. Tr. Linn. Soc.* xiii, p. 141 (1821).

Ketupa javanensis, *Less. Traité*, p. 114 (1831); *Blyth, Cat.* p. 37; *Horsf. & M. Cat.* i, p. 76; *Hume, Rough Notes*, p. 384; *Sharpe, Cat. B. M.* ii, p. 9; *Blyth & Wald. Birds Burm.* p. 66; *Armstrong, S F.* iv, p. 300; *Hume & Dav. S. F.* vi, pp. 33, 497; *Hume, Cat.* no. 73 bis; *Bingham, S. F.* ix, pp. 146, 471; *Oates, B. B.* ii, p. 149; *id. in Hume's N. & E.* 2nd ed. iii, p. 98.

Coloration. Similar to that of *K. flavipes*, except that the present species is browner and less orange, especially above; the buff borders to the upper plumage frequently wanting altogether in old birds, whilst white or buff spots on the dark parts of the feathers are more numerous. Chiefly, however, the species is distinguished by having the tarsus entirely naked behind up to and including the joint, and not, as a rule, clad in front so much as halfway down, and by much smaller size.

Bill dusky; cere dark slate-colour; irides light yellow; legs and feet dusky yellowish brown.

Length about 18·5; tail 6·5; wing 13·5; tarsus 2·75; bill from gape 1·75.

Distribution. Arrakan, the Irrawaddy delta, and throughout Tenasserim, the Malay Peninsula, Java, Sumatra, and Borneo.

Habits, &c. Very similar to those of the other species, except that *K. javanensis* appears to feed largely on insects, but it probably eats fish and crabs as well. It sees well by day and has a low soft whistling note. Major Bingham found the nest, containing a single white egg, in a fork of a large peepul tree, on February 27th. The egg measured 2·21 by 1·17, and was, as usual, a broad oval.

Genus **BUBO**, Duméril, 1806.

This and the next genus contain the Eagle-Owls, birds of large size, with aigrettes and with the tarsus fully feathered; the claws are powerful and well curved, the inner (2nd) claw being the longest, much exceeding the hind (1st) claw in length. The wing is rounded, the 3rd primary longest, 4th subequal; tail moderate, slightly rounded at the end.

This is a large genus, found over the greater part of the world, except in Australia. Three species are Indian.

Key to the Species.

a. General colour buff and blackish brown.
  a'. Toes completely feathered: wing 17–20 . . *B. ignavus*, p. 284.
  b'. Last joint of toes naked: wing 14·75–16. . *B. bengalensis*, p. 285.
b. General colour greyish brown, toes half naked. *B. coromandus*, p. 286.

1167. **Bubo ignavus.** *The Great Horned Owl or Eagle-Owl.*

Strix bubo, *Linn. Syst. Nat.* i, p. 131 (1766).
Bubo ignavus, *Forster, Syn. Cat. Brit. Birds*, p. 3 (1817); *Sharpe, Cat. B. M.* ii, p. 14; *Hume, S. F.* vii, p. 346; *id. Cat.* no. 68 ter; *id. S. F.* ix, p. 311 note; *Scully, Ibis*, 1881, p. 425; *St. John, Ibis*, 1889, p. 154.
Bubo maximus, *Fleming, Brit. An.* p. 57 (1828); *Blyth, Cat.* p. 34; *Sclater, P. Z. S.* 1860, p. 99; *Jerdon, B. I.* iii, p. 870; *Hume, Rough Notes*, p. 374; *id. S. F.* iii, p. 327; *Scully, S. F.* iv, p. 129.
Strix turcomana, *Eversm. Add. Pall. Zoog.* p. 3 (1835).
Strix sibirica, *Licht. Susemihl, Abbild. Vög. Eur.* pl. 44 (1846–52).
Bubo hemachalana, *Hume, S. F.* i, p. 315 (1873).
Bubo turcomanus, *Sharpe, Cat. B. M.* ii, p. 17 (B. ignavi *subsp.*); *Hume, S. F.* vii, p. 348; *id. Cat.* no. ? 68 quat.; *Biddulph, Ibis*, 1881, p. 45; *Menzbier, Ibis*, 1885, p. 262.

Coloration. Lores and anterior portion of cheeks white or pale fulvous, with black shafts; ear-coverts and hinder part of disk tawny, with indistinct brown cross-bars, the outermost disk-feathers sometimes black-tipped; aigrettes black, the inner or both margins buff, especially towards the base; upper plumage black, varied and mottled with buff, there being broad black shaft-stripes on the head and neck, the broad buff edges of the neck-feathers less mottled with black than elsewhere; much buff on the outer scapulars; upper tail-coverts tawny buff, with narrow wavy blackish cross-bars; primaries orange-buff, barred and tipped with dark brown; secondaries brown, with mottled buff bars, becoming entirely buff on the inner web and on both webs at the base; tail barred buff and dark brown, both colours mottled on the middle feathers. Chin and below the throat pure white, remainder of lower surface buff; the throat with black median stripes and cross-bars, and the breast with broad black median stripes; abdomen and flanks with narrow dark brown shaft-lines and wavy cross-bars, the cross-bars alone remaining on the vent, legs, under tail-coverts, and wing-lining.

Typical *B. ignavus*, from Europe, has more black on the back and the middle tail-feathers, the pale cross-bars on the latter being very narrow; but there is a complete passage into the Asiatic *B. turcomanus*, with broad mottled buff edges to the back-feathers, and the buff or white cross-bars on the median rectrices as wide as the dark. Some Asiatic birds are very pale, especially beneath, others as rich an orange-buff as European skins; the difference depends probably on the bleaching action of the sun in dry open tracts. Both races have been brought from the Himalayas.

Bill dark slate-colour; irides golden orange; claws dusky at base, black at tips (*Scully*). The toes are completely covered and concealed above by feathers, which overhang the base of the claws.

Length of female about 26; tail 10; wing 19; tarsus 3; bill from gape 1·9. Males run a little smaller.

Distribution. Throughout the Palæarctic region. This noble Owl has occasionally been killed in Tibet and the higher Himalayas as far east as the Ganges (Bhagirati). Both Biddulph and Scully obtained it in Gilgit, and St. John at Quetta and Candahar.

Habits, &c. The Great Eagle-Owl is bold and powerful, living on game birds, hares, rabbits, and even fawns of deer, and especially, it is said, on crows. The call is a loud, deep, dissyllabic hoot. The eggs have not been taken in India; in Europe they are generally two or three in number, white, and rounded oval as usual, and are laid about March on a ledge of rock or in a hollow tree.

1168. **Bubo bengalensis.** *The Rock Horned Owl.*

Otus bengalensis, *Frankl. P. Z. S.* 1831, p. 115.
Bubo cavearius, *Hodgs. As. Res.* xix, p. 169 (1836).
Urrua cavearia, *Hodgs. J. A. S. B.* vi, p. 372.
Urrua bengalensis, *Jerdon, Madr. Jour. L. S.* x, p. 87; *Jerdon, B. I.* i, p. 128; *Butler, S. F.* iii, p. 450.
Bubo bengalensis, *Blyth, Cat.* p. 35; *Horsf. & M. Cat.* i, p. 73; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 231; *Hume, S. F.* i. p. 163; *Sharpe, Cat. B. M.* ii, p. 25; *Davidson & Wend. S. F.* vii, p. 76; *Ball, ibid.* p. 200; *Butler, ibid.* p. 180; ix, p. 376; *Hume, Cat.* no. 69; *Vidal, S. F.* ix, p. 35; *Reid, S. F.* x, p. 14; *Davison, ibid.* p. 343; *Oates, B. B.* ii, p. 150; *id. in Hume's N. & E.* 2nd ed. iii, p. 99; *Barnes, Birds Bom.* p. 65; *id. Journ. Bom. N. H. Soc.* iii, p. 221.
Ascalaphia bengalensis, *Blyth, Ibis,* 1866, p. 253; *Hume, Rough Notes,* p. 366; *id. N. & E.* p. 62; *A. Anderson, P. Z. S.* 1872, p. 81; *Hayes Lloyd, Ibis,* 1873, p. 405; *Ball, S. F.* ii, p. 381; *Blyth, Birds Burm.* p. 65.

Ghúghú, H.; *Ghubád*, Mahr.; *Yerra gudla guba*, Tel.; *Kotang*, Tam.

Coloration. Lores whitish with black shafts; cheeks and ear-coverts tawny with black streaks, and bordered behind by a black rim to the facial disk; aigrettes black, with buff margins towards the base; forehead buff, passing into the crown and nape, which are blackish brown, the feathers with buff spots on the edges; hind-neck and sides of neck nearly pure buff, with broad black shaft-stripes; rest of upper parts blackish brown, spotted and mottled with buff and white; the buff spots on the outer scapulars are very large, and the rump and upper tail-coverts are chiefly buff; primaries rich orange-buff, barred and tipped with brown; secondaries brown, with mottled buff bars, becoming entirely buff on the inner web and towards the base; tail barred buff and brown, both colours mottled on the middle feathers; chin and below the throat white, rest of lower surface buff; upper throat with fusiform black shafts; breast with broad black stripes passing into the narrow dark shaft-lines and wavy cross-bars of the abdomen, shaft-lines disappearing and the cross-bars growing fainter or occasionally dying out on the legs, vent, and lower tail-coverts.

Bill horny black; irides orange-yellow; claws dusky (*Hume*).

Length 22; tail 8; wing 15·5; tarsus 3; bill from gape 1·7.

Distribution. The Rock Horned Owl is almost, if not entirely, confined to the Indian Peninsula, being one of the commonest Owls of Northern and Central India, except in desert tracts; less common in the south, wanting in Ceylon. It is found, though not commonly, in Rajputana, Sind, and the Western Punjab, and has been reported to occur in Afghanistan; it inhabits Kashmir and the lower Himalayas to the westward, though not Nepal or Sikhim; it is very rare in Lower Bengal and apparently unknown to the eastward, though Blyth states that it occurs in Arrakan.

Habits, &c. This fine Owl haunts rocky hills and ravines, alluvial cliffs, and brushwood, beside rivers and streams, and in flat country groves of trees. It is by no means exclusively nocturnal, and it lives on rats and mice, birds, lizards, snakes, crabs, and large insects. Its cry is a loud dissyllabic hoot. The breeding-season is from December to April, and from two to four white oval eggs are laid on a rocky ledge or in a cave, or on the ground under a bush or tuft of grass. The eggs measure about 2·1 by 1·73.

1169. **Bubo coromandus.** *The Dusky Horned Owl.*

Strix coromanda, *Lath. Ind. Orn.* i, p. 53 (1790).

Urrua coromanda, *Hodgs. J. A. S. B.* vi, p. 373; *Jerdon, B. I.* i, p. 130; *id. Ibis,* 1871, p. 345; *Hume, N. & E.* p. 63; *Butler, S. F.* iii, p. 450; v, p. 217; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 12.

Urrua umbrata, *Blyth, J. A. S. B.* xiv, p. 180 (1845).

Bubo umbratus, *Blyth, Cat.* p. 35.

Bubo coromandus, *Horsf. & M. Cat.* i, p. 75; *Hume, S. F.* i, p. 164; *Adam, ibid.* p. 369; *Sharpe, Cat. B. M.* ii, p. 35; *Butler, S. F.* vii, p. 180; *Ball, ibid.* p. 201; *Cripps, ibid.* p. 254; *Hume, Cat.* no. 70; *Reid, S. F.* x, p. 15; *Davidson, ibid.* p. 291; *Taylor, ibid.* p. 455; *Oates, B. B.* ii, p. 151; *id. in Hume's N. & E.* 2nd ed. iii, p. 101; *C. H. T. Marshall, Ibis,* 1884, p. 407; *Barnes, Birds Bom.* p. 66.

Ascalaphia coromanda, *Blyth, Ibis,* 1866, p. 253; *Hume, Rough Notes,* p. 371; *A. Anderson, P. Z. S.* 1872, p. 81; 1876, p. 316; *Blyth, Birds Burm.* p. 65.

Coloration. Whole plumage above and below greyish brown with dark shaft-stripes, the feathers finely mottled and vermiculated with whitish; more white on the lower surface, which is paler than the upper in consequence; a few white or buff spots on the outer webs of the outer scapulars and on some of the larger and median primary-coverts; lores white, with black shafts; aigrettes darker than crown; quills and tail brown, with pale mottled cross-bands and tips.

Bill greyish white or pale lavender, the tips and culmen pale yellowish horny; irides deep yellow (not orange); claws black (*Hume*).

Length 23; tail 8; wing 16; tarsus 2·5; bill from gape 1·65.

Distribution. The greater part of the Indian Peninsula. This Owl is common in the North-west Provinces and throughout the greater part of the Gangetic plain, being far from rare in Eastern Bengal. It has been obtained, though rarely, from the Punjab and Sind, but not farther west. To the eastward it has been recorded from the N. Khási hills, Assam, Tipperah, and Arrakan, but not Manipur, nor farther south. Sharpe found a specimen in the Paris Museum from China. It occurs in the better watered parts of Rajputana, in Khandesh, Raipur, Chutia Nagpur, the Carnatic, and Mysore, but not in the Bombay Deccan or Concan, Western Gháts, Malabar coast, nor in Ceylon.

Habits, &c. This dull-plumaged bird inhabits well-wooded and watered tracts, where it lives on small mammals, birds, frogs, lizards, &c. A. Anderson mentions seeing one pursue a heron. It also kills and eats crows. Like its congeners it is by no means exclusively nocturnal. The call is characteristic, resembling, according to Butler, *wo*, *wo*, *wo*, *wo-o-o-o*, and is chiefly heard in the rains. It breeds from December to February, depositing generally two eggs in a stick nest, more or less lined with green leaves and a few feathers or a little grass. Sometimes the deserted nest of an Eagle or some other bird is utilized, and occasionally the eggs are laid in a hollow tree. They are creamy white (Anderson once obtained a coloured pair), and measure about 2·33 by 1·89.

Genus **HUHUA**, Hodgson, 1837.

This genus is distinguished from *Bubo* by the important character of the young having a perfectly distinct plumage, an exceptional case amongst Owls. The birds moult from the immature into the adult garb. The present type is further distinguished by having the irides dark brown instead of yellow, and by the wing being more rounded, the 4th and 5th quills being longest. The inner claw is very large.

Only two species are known; both occur within our limits.

Key to the Species.

a. Back and scapulars unbarred, more or less edged and mottled with buff: wing 15–19........ *H. nepalensis*, p. 287.
b. Back and scapulars with wavy rufous cross-bars: wing about 13·5 .... *H. orientalis*, p. 289.

1170. **Huhua nepalensis.** *The Forest Eagle-Owl.*

Bubo nipalensis, *Hodgson, As. Res.* xix, p. 172 (1836); *Sharpe, Cat. B. M.* ii, p. 37; *Hume & Dav. S. F.* vi, p. 30; *Hume, Cat.* no. 71;

Scully, S. F. viii, p. 231; *Legge, Birds Ceyl.* p. 131; *Davison, S. F.* x, p. 343; *Oates, B. B.* ii, p. 152; *Hume, S. F.* xi. p. 20.
Huhua nipalensis, *Hodgson, J. A. S. B.* vi, p. 362; *Jerdon, B. I.* i, p. 131; *Blyth, Ibis,* 1866, p. 254; 1872, p. 89; *Beavan, P. Z. S.* 1868, p. 400; *Hume, Rough Notes,* p. 378; *Jerdon, Ibis,* 1871, p. 346; *Hume, S. F.* i. p. 431; *Blanford, J. A. S. B.* xli, pt. 2, p. 154; *Blyth & Wald. Birds Burm.* p. 65; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 68; xlvii, pt. 2, p. 12; *Gurney & Fitzgerald, Ibis,* 1878, p. 119; *Gurney, P. Z. S.* 1884, p. 558, pl. lii.
Huhua pectoralis, *Jerdon, Madr. Jour. L. S.* x, p. 89, pl. i; *Holdsworth, P. Z. S.* 1872, p. 416.
Bubo orientalis, *Blyth, Cat.* p. 34; *Sclater, P. Z. S.* 1878, p. 790; *nec* Strix orientalis, *Horsf.*
Ptiloskelos amherstii, *Tickell, J. A. S. B.* xxviii, p. 448 (1859).

Huhu, Huhu Chil, Nepal; *Migdori,* Bhot.; *Uman,* Malayalim; *Loho, Bakamúna,* Cing.; *Peria-anda,* Tam. (Ceylon).

Coloration. Lores, cheeks, and ear-coverts greyish or brownish white, shafts and tips of lores and ear-coverts blackish brown; long-pointed aigrettes blackish brown, the inner webs or sometimes the whole barred with white or buff; upper plumage throughout dark brown, the feathers barred, edged, and mottled with buff, least, and frequently not at all, on the crown, back, and smaller wing-coverts, most on the neck, scapulars, and larger wing-coverts; sides of neck, outer scapulars, and upper tail-coverts buff, barred with brown, the scapulars forming a distinct buff band on each side; quills and tail-feathers dark brown, with pale bars and tips, more distinct on the secondaries than on the primaries, the pale bars on the inner webs near the base, except on the middle pair of tail-feathers, very broad and nearly or quite white; lower plumage white, often tinged fulvous, the feathers broadly barred with dark brown, the subterminal bar on each feather forming a crescentic or heart-shaped spot.

Young birds are white or buff, with crescentic dark brown bars on all feathers of both the upper and lower surface; the quills and tail-feathers as in adults. Even after a change of plumage (by a moult) the aigrettes are barred throughout at first and the dosral feathers have more buffy bars and markings than those of older birds.

Bill yellow; irides brown; toes yellow; claws dusky at the end, pale at base.

Length about 24 inches (21·5–27); tail 9; wing 17 (15·3–19); tarsus 2·75; bill from gape 2. Females are generally larger than males and Himalayan birds than those from Southern India and Ceylon.

Distribution. This Owl is found in the forests of the Himalayas as far west as Kumaun, and probably farther, at elevations not exceeding 7000 feet, also in the hill-forests of the Nilgiris and Malabar and in the higher parts of Ceylon. To the eastward it has been obtained in the Assam hills, and in Burma near Toungngoo, in Karennee, and from Bilugyun Island opposite Moulmein. There can now be no question that Jerdon's *Huhua pectoralis*, from Malabar, is the same bird, as Davison found the present species on the Nilgiris. The description by Tickell of *Ptiloskelos amherstii* appears to me to agree better with the young of this bird than with that of *B. orientalis*, and Blyth (Ibis, 1872, p. 89), who saw Tickell's original specimen, identified it with *B. nepalensis* without hesitation.

Habits, &c. A forest bird, shy and seldom seen. Very little is known of its food, though from its size and powerful claws it probably lives on birds or mammals, and it is said to kill pheasants, hares, young deer, &c. It is somewhat diurnal in its habits, and I heard one calling and saw it shot about 3 o'clock in the afternoon. The call is, as described by Jerdon, "a low deep and far-sounding moaning hoot." The nidification is unknown.

1171. **Huhua orientalis.** *The Malay Eagle-Owl.*

Strix orientalis, *Horsf. Tr. Linn. Soc.* xiii, p. 140 (1821).
Strix sumatrana, *Raffl. Tr. Linn. Soc.* xiii, p. 279 (1822).
Strix strepitans, *Temm. Pl. Col.* pls. 174, 229 (1823).
Bubo orientalis, *Horsf. & M. Cat.* i, p. 72, part; *Sharpe, Cat. B. M.* ii, p. 39; *Hume, S. F.* iv, p. 223; *Hume & Dav. S. F.* vi, p. 31; *Hume, Cat.* no. 71 bis; *Oates, B. B.* ii, p. 153.
Huhua orientalis, *Blyth, Ibis,* 1863, p. 25, pt.; *Jerdon, Ibis,* 1871, p. 346, pt.; *Holdsworth, P. Z. S.* 1872, p. 416.

Coloration. Lores, cheeks, and ear-coverts pale brown or brownish white, the lores black-shafted; blackish supercilia; aigrettes blackish brown, some barred on the inner webs or throughout with white or pale rufous; upper plumage dark brown, narrowly and irregularly barred with dull rufous; outer webs of the outer scapulars partly or wholly white; quills and tail-feathers dark brown with pale mottled bars and tips, the bars, except on the middle tail-feathers, broader and white on the inner webs towards the base; lower parts white, more or less tinged fulvous, the feathers narrowly barred with dark brown, the bars much closer together as a rule on the upper breast.

Young whitish, barred with brown above and below, the bars narrow, closer and paler than in the young of *H. nepalensis*.

Bill, cere, eyelids, and feet yellow; irides dark brown (*Davison*). The toes are almost naked above.

Length about 18; tail 7; wing 13·75; tarsus 2; bill from gape 1·75.

Distribution. The Malay Peninsula and the islands of Sumatra, Java, and Borneo. Very rare in Southern Tenasserim, where Davison obtained a single specimen. Nothing is known of the habits or nidification.

Genus **NYCTEA**, Stephens, 1826.

The Snowy Owl forms a genus differing from *Bubo* chiefly in plumage and in having aigrettes so small that they are not easily detected. The feathers of the facial disk and those of the legs are peculiarly dense and hairy, and so long that the bill and claws are almost concealed. Wings and tail as in *Bubo*; the under tail-coverts extend nearly to the end of the tail. There is a single species, which has once been obtained within Indian limits.

1172. **Nyctea scandiaca.** *The Snowy Owl.*

Strix scandiaca *and* S. nyctea, *Linn. Syst. Nat.* i, p. 132 (1766).
Strix nivea, *Thunb. Kon. Svensk. Vet.-Ak. Handl.* xix, p. 184 (1798).
Nyctea nivea, *Hume, Ibis*, 1871, p. 410.
Nyctea scandiaca, *Sharpe, Cat. B. M.* ii, p. 125; *Hume, S. F.* vii, p. 345; *id. Cat.* no. 68 bis.

Coloration. Pure white, a few brown bars remaining here and there, even in old males, more in old females. In young birds the facial disk, a narrow collar on the back of the neck, the chin and throat, wing-lining and axillaries, feathers on the legs and feet, vent and under tail-coverts are pure white; the rest of the plumage, including the quills and tail, barred with brown, the bars being broad, rather distinct from each other, crescentic or subcrescentic in shape, and not continuous from feather to feather either above or below.

Bill black; irides golden yellow.

Length about 23; tail 9·25; wing 17; tarsus 2·3; bill from gape 1·7.

Distribution. The northern portion of both hemispheres, some birds migrating into the temperate zone in winter. A single specimen was once received by Mr. Hume from Mardán in the North-west Punjab, not far from Peshawur. The bird was obtained by Dr. Johnson on March 3rd, and other specimens were said to have been seen by the shikari. So far as is known this Owl has not since been observed within Indian limits.

Genus **SCOPS**, Savigny, 1810.

The Scops Owls are of small size and furnished with aigrettes usually of considerable length. The head is rather large, the nostrils round and pierced in the anterior margin of the cere, which is slightly prominent. The wings are long, but vary much in shape, being far more rounded in some species than in others; the tail is moderate in length and rounded at the ends. The tarsus is feathered more or less completely. The plumage of the young differs from that of adults.

The members of this genus generally have the plumage minutely vermiculated or stippled with delicate markings, and the distinction of the species is rather difficult, several of the forms showing considerable variation. The number of species has, however, certainly been overrated; only two were admitted by Jerdon, whilst in Hume's Catalogue no less than 18 names are enumerated, but of these three are regarded as not worthy of distinction, and one as of doubtful validity. Anyone, however, who reads Hume's notes will recognize how very doubtful many of the nominal species are, and I think the 14 remaining species may with advantage be reduced by one-half.

All species of *Scops* are thoroughly nocturnal, and generally make their presence known in the dusk of the evening or after nightfall by a peculiar monotonous, monosyllabic or dissyllabic call, repeated at regular and rather long intervals, generally from inside a bush or tree with thick foliage.

These Owls are insectivorous as a rule, though they occasionally capture and eat small birds or mammals. They are found in most tropical and temperate regions, but are wanting in Australia.

Key to the Species.

a. 3rd quill longest, 1st longer than 8th.
  a′. Feathers on tarsus stop short at base of toes; spots on scapulars white .... *S. giu*, p. 291.
  b′. Feathers extend on to base of toes; spots on scapulars buff .... *S. brucii*, p. 294.
b. 4th or 5th quill longest; 1st much shorter than 8th.
  c′. No distinct collar on hind-neck; pale spots on upper surface; no black shaft-stripes.
    a″. Size moderate: wing about 5·5, tail about 3.
      a‴. Tarsus feathered to base of toes.... *S. spilocephalus*, p. 295.
      b‴. Lower third of tarsus bare .... *S. balli*, p. 296.
    b″. Size large: wing over 7, tail 4·8...... *S. sagittatus*, p. 296.
  d′. A distinct pale collar on hind-neck; black shaft-stripes usually distinct.
    c″. Toes naked........................ *S. bakkamœna*, p. 297.
    d″. Toes feathered above .... *S. semitorques*, p. 300.

1173. **Scops giu.** *The Scops Owl.*

Strix scops, *Linn. Syst. Nat.* i, p. 132 (1766).
Strix giu, *Scop. Ann.* i, p. 19 (1768).
Strix zorca, *Gmel. Syst. Nat.* i, p. 289 (1788).
Scops aldrovandi, *Flem. Brit. An.* p. 57 (1828); *Blyth, Cat.* p. 36.
Scops sunia, *Hodgs. As. Res.* xix, p. 175 (1836); *Blyth, J. A. S. B.* xiv, p. 182; *Jerdon, Ill. Ind. Orn.* pl. 41; *Sharpe, Cat. B. M.* ii. p. 67; *Legge, Birds Ceyl.* p. 139; *Hume, S. F.* vii, p. 201; *id. Cat.* no. 74 bis; *Reid, S. F.* x, p. 16; *C. H. T. Marshall, Ibis,* 1884, p. 408; *Davidson, Jour. Bom. N. H. Soc.* i, p. 179.
Scops pennatus, *Hodgs. J. A. S. B.* vi, p. 369 (descr. nulla); *Blyth, J. A. S. B.* xiv, p. 183 (1845); *Hume, N. & E.* p. 65; *id. S. F.* iii, p. 38; *Sharpe, Cat. B. M.* ii, p. 53 (subsp.); *Hume & Dav. S. F.* vi, p. 34; *Butler, S. F.* vii, p. 180; ix, p. 376; *Ball, S. F.* vii, p. 201; *Cripps, ibid.* p. 255; *Hume, Cat.* no. 74; *Biddulph, Ibis,* 1881, p. 46; *Scully, ibid.* p. 426; *Bingham, S. F.* ix, p. 147; *Hume & Dav. S. F.* x, p. 343; *Oates, B. B.* ii, p. 154; *id. in Hume's N. & E.* 2nd ed. iii, p. 103; *Barnes, Birds Bom.* p. 70; *Littledale, Jour. Bom. N. H. Soc.* i, p. 196; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 573; v, p. 557; vii, p. 375; *Hume, S. F.* xi, p. 21.

Scops gymnopodus, *Gray, Cat. Accip. B. M.* 1844, p. 44 (descr. nulla); *Sharpe, Cat. B. M.* ii, p. 65, pl. iv, fig. 2; *Hume, Cat.* no. 74 ter A.

Scops malayanus, *Hay, Madr. Jour. L. S.* xiii, pt. 2, p. 147 (1845); *Sharpe, Cat. B. M.* ii, p. 58, pl. iv, fig. 1 (subsp.); *Hume, S. F.* vii, p. 355; *id. Cat.* no. 74 sex.

Ephialtes sunia, *Horsf. & M. Cat.* i, p. 70; *A. Anderson, S. F.* iii, p. 388; *id. P. Z. S.* 1875, p. 25; 1876, p. 781.

Ephialtes pennatus, *Jerdon, B. I.* i, p. 136; *Hume, Rough Notes*, p. 386; *id. S. F.* ii, p. 151; *A. Anderson, P. Z. S.* 1875, p. 25.

Ephialtes bakkamœna, *apud Blyth, Ibis*, 1863, p. 27; 1866, p. 255; *Jerdon, Ibis*, 1871, p. 347; *Blyth & Wald. Birds Burm.* p. 66; *nec* Otus bakkamœna, *Penn.*

Ephialtes jerdoni, *Walden, A. M. N. H.* (4) v, p. 417 (1870); *id. Ibis*, 1871, p. 112.

Scops giu, *Sharpe, Cat. B. M.* ii, p. 47; *Barnes, S. F.* ix, p. 452; *Blanf. Ibis*, 1894, p. 528.

Scops rufipennis, *Sharpe* (subsp.), *Cat. B. M.* ii, p. 60 (1875); *Hume, S. F.* vi, p. 34; vii, p. 350; *id. Cat.* ? no. 74 B.

Ephialtes nicobaricus, *Hume, S. F.* iv, p. 283.

Scops nicobaricus, *Hume, Cat.* no. 74 quat.; *Gurney, Ibis*, 1884, p. 172.

Scops minutus, *Legge, A. M. N. H.* (5) i, p. 175 (1878); *id. S. F.* vii, p. 145; *id. Birds Ceyl.* p. 143, pl. iv; *Hume, Cat.* no. 74 C.

The Indian Scops Owl, Jerdon; *Choghad kusial, Sunya kusial*, Nepal; *Dundul*, Chamba; *Chitta guba, Yerra chitta guba*, Tel.

Coloration. Lores white or pale grey with some black tips, rest of facial disk greyish white with indistinct brown bars; ruff white or pale rufous tipped with black; whole upper plumage grey, more or less tinged with rufous, the feathers minutely speckled black and white, and generally with black median stripes, which vary much in definition; some feathers are stippled at the end, white or buff further down with black shaft-stripes and cross-bars, and the white or buff spots thus formed are conspicuous in some skins, almost wanting in others; outer scapulars white on the outer webs, with black ends and sometimes a black inner border to the white spots; some white or buff spots on the wing-coverts; quills brown, with paler mottled bars and tips, the bars forming white or buff patches on the outer webs of several primaries and on the inner webs of all wing-feathers; tail brown, much mottled with whitish on the middle feathers and outer edges of the others, all with narrow pale bars dark-edged; lower parts paler than the upper, closely stippled with dark brown or black on a white ground, and more or less tinged with buff or rufous, the feathers with blackish shaft-stripes, usually broadest on the breast, and small dark wavy cross-bars, broken up into minute dots towards the ends of the feathers.

Rufous phase (*S. sunia*). The upper parts are sometimes pale chestnut with some black shaft-stripes, especially on the head, and with white black-tipped spots on the scapulars; the lower surface varying, the usual markings generally remaining on the lower breast and abdomen. In one specimen from Camorta in the

Nicobars, already described by Gurney as a form of *S. nicobaricus*, the whole lower surface is chestnut and the upper surface darker red than usual, but still traces of the normal markings remain on the wings and tail. In other skins the markings have disappeared on the rectrices, but are retained on the wing-feathers and on the abdomen. Again, in others faint obsolete marks appear on the upper surface, and there is a complete gradation from these forms into the ordinary grey *S. giu* (*S. pennatus*). Moreover, chestnut varieties of all the local forms occur, of the small dark *S. minutus* of Ceylon and the larger dark *S. malayanus* of Malacca, as well as of the large *S. pennatus* of the Himalayas. It should be added that both Blyth and Jerdon unhesitatingly regarded *S. sunia* as a rufous phase of *S. pennatus*, though some later writers have thought differently.

Young birds are greyish brown, speckled throughout, and with indistinct cross-barring on both upper and lower surface.

Bill dusky greenish; iris pale golden yellow; feet fleshy grey (*Jerdon*). Third quill longest. Toes and extreme end of tarsus bare of feathers.

Length about 7·5; tail 2·75; wing 5·75; tarsus ·85; bill from gape ·7. South Indian and Ceylon birds are smaller: wing 4·75 to 5·25.

In the present species no less than seven of the names of Hume's Catalogue are included, three of those names, however, being marked by Hume as doubtful and invalid. In Sharpe's Catalogue, *S. pennatus* and several other forms were classed as races or subspecies of the European Scops Owl, *S. giu*, and I think that this is a correct view. Some of the birds found in North-western India are typical *S. giu*, absolutely identical with grey European specimens. As a rule, however, the Indian form *S. pennatus* is slightly browner and darker and the aigrettes are generally rufous in part. A rufous form of *S. giu* occurs in Europe, but it never approaches the Indian *S. sunia*, which is a remarkable instance of a bird's assuming a rufous plumage locally. The following Indian named forms of *S. giu* besides *S. pennatus* and *S. sunia* require notice:—

Scops rufipennis is a small, rather uniformly-coloured bird from the Carnatic.

Scops gymnopodus was a name given by Mr. G. R. Gray to a skin in which the lower portions of both tarsi were naked. Dr. Sharpe tells me that, as no additional specimen has been found, he suspects the skin, which agrees with normal *S. pennatus* in plumage, had accidentally lost the feathers of the lower tarsus.

Scops nicobaricus was founded on a very dark rufous skin, but with the brown markings of the dorsal surface still conspicuous. There are in the Hume collection precisely similar specimens from the Malay Peninsula.

Scops malayanus is a dark brownish form from Malacca, differing from typical *S. pennatus* precisely as that does from the Western *S. giu*. Wing 5·35.

Scops minutus is the best marked of all these races and the smallest. It is from Ceylon, and resembles *S. malayanus* in its dark brownish colour. Wing about 4·8.

As in so many other cases, specimens from the South are smaller and darker, the smallest and darkest of all being the Ceylonese variety.

Distribution. Central and Southern Europe and Asia, and the greater part of Africa. One form or another of this bird is found in all parts of India, Ceylon, and Burma, except perhaps the higher Himalayas.

Habits, &c. This is a migratory species in Europe and probably to some extent in India. No nests appear to have been taken in the plains, but the small dark Southern forms certainly breed in the hills of Southern India and Ceylon, for there are nestlings from both localities in the British Museum, and Mr. Daly tells me he has taken the eggs on the Shevroys. There can be but little doubt that *S. giu* breeds in the Himalayas also, but it is doubtful whether the few supposed instances on record do not apply to another species. The habits are those of the genus; the call is a peculiar monotonous monosyllabic hoot, repeated at regular intervals, generally from a dense-foliaged tree.

1174. **Scops brucii.** *The Striated Scops Owl.*

Ephialtes brucei, *Hume, S. F.* i, p. 8 (1873); *Fairbank, S. F.* iv, p. 254.

Scops brucei, *Sharpe, Cat. B. M.* ii, p. 62; *Blanford, S. F.* v. p. 245; *Doig, S. F.* vii, p. 505; *Hume, Cat.* no. 74 sept.; *Vidal, S. F.* ix, p. 36; *Butler, ibid.* p. 376; *Barnes, ibid.* p. 452; *Biddulph, Ibis,* 1881, p. 47; *Scully, ibid.* p. 426; *Davidson, S. F.* x, p. 291; *Barnes, Birds Bom.* p. 71; *Sharpe, Yark. Miss., Aves,* p. 12, pl. ii; *Blanf. Ibis,* 1894, p. 528.

Kutruz, Mahr.

Coloration. Lores sullied white, with black tips, rest of the face grey, ruff tipped dark brown and without any ferruginous tint; upper plumage sandy grey (dark isabelline), with narrow blackish shaft-stripes, the surface generally very finely and uniformly speckled with dark brown on buff; spots on outer scapulars pale dull buff, not white; wing and tail-feathers marked as in *S. giu*, but with dull dark brown and buff; lower plumage marked with dark shaft-stripes like the upper, and similarly coloured, but paler and less uniform, with some white on the abdomen.

Bill horny; irides brilliant yellow; toes olivaceous grey (*Doig*).

Length about 8·5; tail 3·2; wing 6·3; tarsus 1·2; bill from gape ·7. Third quill longest; feathering of tarsus extends on to the base of the toes.

Distribution. Specimens have been obtained in the Bombay Presidency at Ahmednagar and at Khed in Ratnágiri, and the bird has probably occurred in Western Khandesh; it has also been met with several times in Sind, and Mr. Barnes found it breeding at Chaman in South Afghanistan. It has been recorded at Sultanpur in Oudh, and at Gilgit, and beyond Indian limits at Panjah in Wakhán, and at considerable elevations on the Kuen-luen range; also near Bokhara, on the Murgháb, and in Transcaspia, as I learn from Mr. Dresser, who has examined specimens. It is probably migratory, but nothing is known of its habits.

1175. **Scops spilocephalus.** *The Spotted Himalayan Scops Owl.*

Ephialtes spilocephalus, *Blyth, J. A. S. B.* xv, p. 8 (1846).
Ephialtes scops (*L.*), *apud Hutton, J. A. S. B.* xvii, pt. 2, p. 4.
Phodilus nipalensis, *G. R. Gray, Hand-list*, i, p. 53 (descr. nulla), *teste Sharpe.*
Ephialtes gymnopodus, *apud Hume, Rough Notes*, p. 390; *Jerdon, Ibis*, 1871, p. 347; *Cock & Marsh. S. F.* i, p. 349; *nec Gray.*
Scops spilocephalus, *Hume, N. & E.* p. 66; *Sharpe, Cat. B. M.* ii, p. 63; *Hume, S. F.* vii, p. 352; *id. Cat.* no. 74 ter; *C. H. T. Marshall, Ibis*, 1884, p. 408; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 573; vii, p. 376; *Oates in Hume's & N. E.* 2nd ed. iii, p. 104.

Coloration. Face whity brown, indistinctly barred; lores whitish, with black tips; ruff buff, with broad tips of dark brown; broad frontal area extending above the eyes lighter than the crown; upper parts speckled greyish to rufous brown, and marked, especially on the crown and nape, with pale spots, each with a dark brown or black spot behind it; there are the usual white spots, bordered with blackish inside and at the ends, on the outer webs of the outer scapulars, and a few white spots on the wing-coverts; quills and tail-feathers brown with pale bands as in *S. giu*, but the pale bands across the tail are generally much more numerous, and the white spots on both webs of the primaries are dull and inconspicuous; lower parts speckled brown on white, and with indistinct pale brown-tipped spots on the breast and abdomen.

Both a greyish and a rufous phase are found, but the colour is never chestnut as in the *sunia* variety of *S. giu.*

Bill yellowish; iris yellow; feet fleshy brown. Tarsus not feathered quite to the distal extremity; toes bare; 4th or 5th quill longest.

Length of males about 7·5; tail 3; wing 5·5; tarsus 1·15; bill from gape ·7. Females are a little larger: wing 5·7; tail 3·25.

Distribution. Throughout the Himalayas as far west as Murree, at elevations between about 3000 and 6000 feet. There is in the British Museum a skin collected by Godwin-Austen at Asalu, Nága hills; and Fea obtained specimens identified by Salvadori as this species at Bhámo and in Karennee.

Habits, &c. According to Hutton, this *Scops* utters a double whistle—*who-who.* It lays 3 to 5 round oval white eggs on the bare wood in a hollow tree, or in a hole in the wood; the eggs measure about 1·26 by 1·09. The breeding-season is from the middle of March to the middle of June.

1176. Scops balli. *The Andaman Scops Owl.*

Ephialtes spilocephalus, *apud Ball, J. A. S. B.* xli, pt. 2, p. 276; *id. S. F.* i, p. 53; *nec Blyth.*
Ephialtes balli, *Hume, S. F.* i, p. 407 (1873); ii, pp. 151, 491.
Scops modestus, *Walden, A. M. N. H.* (4) xiii, p. 123 (1874); *id. Ibis*, 1874, p. 129; *Hume, Cat.* no. 74 quint.
Scops balli, *Sharpe, Cat. B. M.* ii, p. 100; *Hume, Cat.* no. 74 oct.; *Sharpe, Yark. Miss., Aves*, p. 151, pl. xx; *Blanford, Ibis*, 1894, p. 526.

Coloration. Face and lores fulvous brown to grey, barred with darker brown, loral plumes tipped black; forehead and supercilia pale, upper surface rufous brown, paler or darker, finely freckled and mottled with black, and dotted over with subcruciform or polygonal whitish or buff spots nearly surrounded by black; the larger white spots on the outer scapulars also bordered with black almost throughout, and sometimes crossed by brown or black lines; quills brown, speckled at the ends and on the outer webs, with conspicuous white spots on the outer webs of the primaries and fulvous notches on the inner webs of all near the base; tail brown with paler cross-bars, sometimes indistinct or broken; lower parts paler and greyer than the upper, speckled with dark brown or white, and spotted with whitish brown-tipped spots.

The young (*S. modestus*) are dull brown, closely but indistinctly barred, especially on the head, neck, and wing-coverts; the white or buff spots on the upper and lower surface are wanting, and the quills are barred throughout with pale rufous.

Colours of soft parts not recorded.

Length about 7·5; tail 3; wing 5·4; tarsus 1. Tarsus slender, lower third generally bare; fifth quill longest.

Distribution. The Andaman Islands. There can, I think, be no question but that *S. modestus* is merely the young, its small size (wing 4·75) being simply due to immaturity. As Hume has shown, other young specimens show a passage between *S. modestus* and *S. balli*. Some of them are more rufous than adults.

1177. Scops sagittatus. *The Large Malay Scops Owl.*

Ephialtes sagittatus, *Cass. Proc. Ac. Nat. Sci. Philad.* iv, p. 121 (1850).
Scops sagittatus, *Sharpe, Cat. B. M.* ii, p. 98; *Oates, S. F.* v, p. 247; *Hume & Dav. S. F.* vi, p. 35; *Hume, Cat.* no. 74 nov.; *Oates, B. B.* ii, p. 156.

Coloration. Feathers around eyes deep ferruginous red; cheeks and lores whitish, the former faintly barred, the latter with brown ends; behind the eye pale rufous, succeeded by a broad crescentic band of dark ferruginous brown on each side of the neck; broad frontal band, extending above the eyes to the aigrettes, white with faint brown bars, sharply divided from the crown, which with the upper parts generally is dull chestnut without distinct speckling, but with small pointed, often subcruciform, white or fulvous spots, bordered with dark brown; quills brown, rufescent and paler on the outer webs and at the tips, and with pale bars throughout; tail-feathers like the back and indistinctly barred; lower parts pale rufous-white, speckled with brown, especially on the breast; all feathers with whitish shaft-stripes interrupted at short intervals by brown spots.

Bill bluish white; cere pale bluish green; irides deep brown; feet and claws bluish white (*Davison*). Tarsus feathered nearly to the end.

Length about 11; tail 4·8; wing 7·4; tarsus 1·1; bill from gape ·9.

Distribution. The Malay Peninsula. A specimen was obtained by Oates at Malewoon, Southern Tenasserim, and another by Davison at Meetan, S.E. of Moulmein.

1178. **Scops bakkamœna.** *The Collared Scops Owl.*

Otus bakkamœna, *Pennant, Indian Zool.* p. 3, pl. iii (1769); *Newton, S. F.* viii, p. 414.

Strix indica, *Gm. Syst. Nat.* i, p. 289 (1788).

Strix lempiji, *Horsf. Tr. Linn. Soc.* xiii, p. 140 (1821).

Scops lettia, *Hodgs. As. Res.* xix, p. 176 (1836); *Hume, N. & E.* p. 67; *Sharpe, Cat. B. M.* ii, p. 85; *Blyth & Wald. Birds Burm.* p. 65; *Inglis, S. F.* v, p. 86; *Oates, S. F.* vii, p. 45; *Hume, ibid.* p. 357; *id. Cat.* no. 75; *Scully, S. F.* viii, p. 232; *Oates, B. B.* ii, p. 155; *id. in Hume's N. & E.* 2nd ed. iii, p. 104; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 572; v, p. 558; vii, p. 375; *Hume, S. F.* xi, p. 22.

Scops malabaricus, *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 119 (1845); *Sharpe, Cat. B. M.* ii, p. 94 (subsp.); *Hume, S. F.* vii, pp. 34, 361; *id. Cat.* no. 75 quat.; *Vidal, S. F.* ix, p. 36; *Butler, ibid.* p. 377; *Davison, S. F.* x, p. 343; *Barnes, Birds Bom.* p. 74; *Oates in Hume's N. & E.* 2nd ed. iii, p. 107.

Scops griseus, *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 119 (1845).

Scops lettioides, *Jerdon, Blyth, J. A. S. B.* xiv, p. 182 (1845).

Scops lempiji, *Blyth, Cat.* p. 36; *Hume, S. F.* iii, p. 38; *Sharpe, Cat. B. M.* ii, p. 91; *Hume & Dav. S. F.* vi, pp. 35, 497; *Hume, Cat.* no. 75 quint.; *Bingham, S. F.* ix, p. 147; *Hume, S. F.* x, p. 183; *Oates, B. B.* ii, p. 156; *id. in Hume's N. & E.* 2nd ed. iii, p. 107.

Ephialtes lempiji, *Horsf. & M. Cat.* i, p. 71; *Jerdon, B. I.* i, p. 138; *Blyth, Ibis,* 1866, p. 256; *Jerdon, Ibis,* 1871, p. 347.

Ephialtes lettia, *Hume, Rough Notes,* p. 393.

Ephialtes griseus, *Hume, t. c.* p. 398; *Anderson, P. Z. S.* 1875, p. 26; *Rainey, S. F.* iii, p. 333.

Ephialtes malabaricus, *Hume, t. c.* p. 402.

Ephialtes jerdoni, *Walden, A. M. N. H.* (4) v, p. 417 (1870); *id. Ibis,* 1871, p. 112.

Scops bakhamuna, *Hume, N. & E.* p. 69; *id. S. F.* v, p. 135; vii, p. 506; ix, p. 37; *id. Cat.* no. 75 ter; *Legge, Birds Ceyl.* p. 135; *Barnes, Birds Bom.* p. 72; *Oates in Hume's N. & E.* 2nd ed. iii, p. 105; *Davidson, Jour. Bom. N. H. Soc.* i, p. 179; *Littledale, ibid.* p. 196; *Barnes, op. cit.* iii, p. 222.

Ephialtes bakhamuna, *Holdsworth, P. Z. S.* 1872, p. 417; *Hume, S. F.* i, p. 432; iii, p. 450.
Scops indicus, *Butler, S. F.* vii, p. 175; *Hume, ibid.* pp. 201, 359.
Scops bakkamœna, *Reid, S. F.* x, p. 16; *Blanf. Ibis,* 1894, p. 527.

The Large Scops Owl, Jerdon; *Tharkavi choghad,* H.; *Lattya kusyal,* Nepal; *Pedda chitta guba,* Tel.

Coloration. Lores sullied white, the longest black-tipped, rest of facial disk light brown or rufescent, generally banded darker; forehead, broad supercilia, and inner webs of the long aigrettes white or buff, speckled and barred with black; ruff white or buff, with dark brown edges; crown and upper parts generally closely vermiculated and speckled with black on a buff ground, many feathers with black shaft-stripes more or less dentate and irregular, or even broken up, generally broadest on the crown and nape; a pale buff nuchal collar, formed by buff feathers with dark edges; large buff spots tipped with black on the outer scapulars, forming a distinct buff scapular band; quills brown, with paler mottled bands and tips, the bands as usual forming white or buff spots on the outer webs of the primaries, but becoming faint and indistinct on their inner webs, better marked on the secondaries, and running into buff indentations on the inner borders, as also on the primaries near the base; tail brown, with pale cross-bands, all the feathers more or less mottled, especially the middle pair and the outer webs and tips of the others; chin white or buff, throat (part of the ruff-feathers) buff with shafts, tips, and sometimes bars dark brown; rest of lower surface white or buff, somewhat irregularly black-shafted, and much stippled with fine wavy cross-bars more or less broken up; legs, vent, and under tail-coverts nearly or quite uniform white or buff.

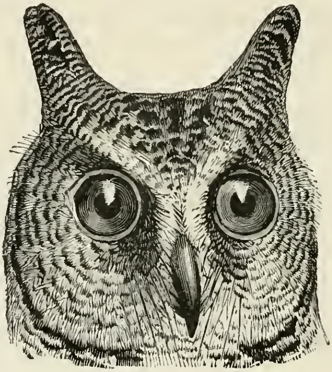

Fig. 76.—Head of *S. bakkamœna,* ¾.

Some birds are more rufous than others. Young birds are very indistinctly coloured, the prevalent markings being close, irregular, dusky cross-bars.

Bill horny (yellowish or greenish), darker above; irides varying from yellow to brown; cere dusky; feet fleshy grey to greenish yellow. Tarsi stout, feathered to the base of the toes, the feathering sometimes in Himalayan birds concealing the junction of the middle and inner toe, but generally stopping just short of it. 4th quill usually longest, 5th subequal, 1st shorter than 10th.

Length of Himalayan birds about 10 inches; tail 3·25; wing 6·75; tarsus 1·25; bill from gape 1. South Indian, Ceylonese, and Malayan birds are considerably smaller: length about 8, wing 6.

Distribution. Throughout the Oriental Region. This Owl is found in all parts of India, Ceylon, and Burma, except in absolute deserts and in the higher Himalayas.

The Owls classed together in the present species were united by Blyth and, at one time, by Jerdon, but have since been divided into four by Hume. The four species are:—

Scops lettia, from the Himalayas, Assam, and Burma; large (wing 6·45–7·2), and "with the bases of the toes feathered."

S. lempiji, Burma, Malay Peninsula and Archipelago; smaller (wing 6–6·5), more rufous, "and with the bases of the toes exposed."

S. malabaricus, west coast of India and Ceylon; small (wing 5·5–6·1), colour more rufous.

S. bakkamœna v. *griseus*, throughout India, except the west coast; small (wing 5·6–6·6) and greyer.

The last two are united by Sharpe under the name of *S. malabaricus*, and made a subspecies of *S. lempiji*. Unless the grey and rufous phases of all Owls are to be regarded as distinct species, a proceeding which in this case would result in intermediate forms being more common than typical specimens, *S. bakkamœna* v. *griseus* and *S. malabaricus* must be regarded as varieties. The same remark applies to *S. lempiji*, which agrees in all respects with *S. malabaricus*. Blyth, it is true, at one time (Ibis, 1866, p. 256) thought that there were two forms (*S. lettia* and *S. griseus*), one with dark and the other (*S. lempiji*=*malabaricus*) with yellow irides, but Hume in his 'Rough Notes' showed that the coloration was variable.

The smaller size of the Southern forms is according to the usual rule, and cannot be regarded as a specific distinction. The only remaining difference is that the feathering in *S. lettia* is said to extend farther down the toes. Occasionally in Himalayan and North Indian examples the feathers do certainly run a little way down the middle and outer toes (such specimens may possibly be hybrids with the closely allied *S. semitorques*, inhabiting the same tracts), but the occurrence is exceptional, and in general the difference is the very trifling one shown in Sharpe's figures (Cat. B. M. p. 96); while an examination of the large series in the British Museum has convinced me that even this difference is not constant, and that in very many cases Himalayan, Burmese, Malaccan, and S. Indian birds are precisely similar as regards the feathering at the base of the toes.

Habits, &c. This is the commonest species of *Scops* in India;

it is resident throughout, and breeds in the plains from January to April, and somewhat later in the Himalayas. It usually lays 4 (sometimes 3 or 5) eggs in holes in trees, more or less lined with leaves and grass. The eggs are pure white, glossy, and very spherical as a rule, and measure about 1·25 by 1·05. This species is thoroughly nocturnal; its call-note, written by Hume *woo-oo*, is double, but the syllables almost run into one.

1179. **Scops semitorques.** *The Plume-foot Scops Owl.*

Otus semitorques, *Schl. Faun. Jap., Aves*, p. 25, pl. 8 (1845–50).
Ephialtes plumipes, *Hume, Rough Notes*, p. 397 (1870).
Ephialtes semitorques, *Jerdon, Ibis*, 1871, p. 348.
Scops plumipes, *Hume, N. & E.* p. 68; *Sharpe, Cat. B. M.* ii, p. 85 (subsp.); *Hume, S. F.* vii, p. 358; *id. Cat.* no. 75 bis; *C. H. T. Marshall, Ibis*, 1884, p. 408; *Oates in Hume's N. & E.* 2nd ed. iii, p. 105.
Scops semitorques, *Sharpe, Cat. B. M.* ii, p. 83; *Blanf. Ibis*, 1894, p. 527.

Coloration similar to that of the greyer forms of *S. bakkamœna*; the markings, especially below, are as a rule more distinct and coarser, the shaft-stripes generally broader and better-marked, and the nuchal collar less distinct, and whitish rather than buff. The present species is rather larger than *S. bakkamœna*, and may be at once distinguished by having the toes feathered above to the end of the subterminal phalanx, and sometimes rather farther.

Length of Himalayan birds about 10; tail 3·4; wing 7; tarsus 1·4: bill from gape ·9.

Distribution. Throughout the Himalayas from Sikhim to Murree, also (the typical form) in Japan and Corea. The Himalayan bird (*S. plumipes*) is slightly smaller than the Japanese.

Habits, &c. Four eggs were taken at Kotgarh, near Simla, on May 13th, from a hole in a tree; they were very similar to those of *S. bakkamœna*, and measured about 1·27 by 1·03.

Genus **ATHENE** *, Boie, 1822.

The members of this genus are of small size, the wing rarely if ever exceeding 7 inches in length, and all are more or less spotted with white on the upper surface, never barred. The cere is swollen, and the nostril is a round orifice near the anterior margin. There is no distinct ruff, and the facial disk is scarcely recognizable. The wings are rounded, the 3rd quill generally longest (4th exceptionally), the 1st shorter than the 5th and not shorter than the 8th; tail moderate; tarsus feathered; toes clad above with feathers or bristles.

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* The name *Carine* has been used by many ornithologists instead of *Athene* for this genus, because the name *Athena* was applied to a butterfly by Hübner in his 'Verzeichniss bekannter Schmetterlinge,' a work with 1816 on the titlepage. I am, however, assured by entomologists that Hübner's work was not really published until 1823 to 1824; consequently there appears no reason to reject Boie's peculiarly appropriate generic name for the owl of Minerva and its allies.

I do not regard *Heteroglaux* as distinct. The wing is slightly more rounded and the nostril a little farther from the anterior border of the cere, but neither difference is of generic importance, and the plumage is precisely similar.

The genus *Athene* is found in the warmer temperate regions of the Old World, in India, and Upper Burma. Three species are Indian.

Key to the Species.

a. Abdomen transversely barred.
  a'. Crown distinctly spotted; 1st quill longer than 7th .... *A. brama*, p. 301.
  b'. Crown unspotted or indistinctly spotted; 1st quill = 8th.......................... *A. blewitti*, p. 303.
b. Abdomen longitudinally streaked .... *A. bactriana*, p. 303.

1180. **Athene brama.** *The Spotted Owlet.*

Strix brama, *Temm. Pl. Col.* pl. 68 (1823).
Noctua indica, *Frankl. P. Z. S.* 1831, p. 115.
Noctua tarayensis, *Hodgs. As. Res.* xix, p. 175 (1836).
Athene brama, *Blyth, Cat.* p. 39; *Horsf. & M. Cat.* i, p. 65; *Jerdon, B. I.* i, p. 141; *Blyth, Ibis*, 1866, p. 257; *Hume, Rough Notes*, p. 404; *id. N. & E.* p. 69; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 94; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 231; *A. Anderson, P. Z. S.* 1872, p. 81; *Hume, S. F.* i, p. 164; *Adam, ibid.* p. 369; *Butler, S. F.* iii, p. 450; *Blanford, Eastern Persia*, ii, p. 118; *Hume, S. F.* iv, p. 457; *Hume & Inglis, S. F.* v, p. 16.
Athene pulchra, *Hume, S. F.* i, p. 469 (1873); *Hume & Oates, S. F.* iii, p. 39.
Carine brama, *Sharpe, Cat. B. M.* ii, p. 138; *Davidson & Wend. S. F.* vii, p. 76; *Ball, ibid.* p. 201; *Cripps, ibid.* p. 256; *Hume, Cat.* no. 76; *Scully, S. F.* viii, p. 232; *Vidal, S. F.* ix, p. 38; *Butler, ib.* p. 377; *Swinhoe, Ibis*, 1882, p. 100; *Reid, S. F.* x, p. 16; *Davison, ibid.* p. 344; *Barnes, Birds Bom.* p. 75; *Oates in Hume's N. & E.* 2nd ed. iii, p. 108.
Carine pulchra, *Sharpe, Cat. B. M.* ii, p. 140 (subsp.); *Hume, Cat.* no. 76 quat.; *Anderson, Yunnan Exped., Aves*, p. 576; *Oates, B. B.* ii, p. 157; *Sharpe, Yark. Miss., Aves*, p. 151, pl. xxi.

Khukhusat, *Khusattia*, *Ulu*, *Choghad* (in the South), H.; *Katoria Pencha*, B.; *Pingalá*, Mahr.; *Dang Tang-pum*, Lepcha; *Paini gante*, Tel. (gold eye); *Andi*, Tam.; *Zee-gwet*, Burm.

Coloration. Lores white or pale buff, with some black tips, a brown spot in front of the eye and a white or whitish one beneath it; ear-coverts barred brown and whitish; forehead and supercilia white; upper parts, wings, and tail uniform brown, varying from greyish or earthy to rufescent, the crown and nape with numerous small white spots; remainder of the upper surface with larger and more distant white spots, arranged, as are those on the crown, in pairs, and occasionally becoming bars, especially on the scapulars; the spots are often wanting on the upper back, and are largest on the wing-coverts; an indistinct half-collar on the hind neck formed by white feathers with brown edges quills with pale cross-bars, becoming white spots on the outer web and, except near the tips of the primaries, white indentations on the inner border; tail with from 4 to 6 white cross-bars varying in breadth and continuity; chin, throat, and sides of neck behind ear-coverts white; a broad brown band, narrower or interrupted in the middle, across the throat; remainder of lower parts white, with broken brown cross-bars formed by subterminal bands and spots on the feathers; these spots generally diminish in size or disappear on the lower abdomen, legs, and under tail-coverts.

Bill greenish horny; irides pale golden yellow; feet dirty greenish yellow (*Jerdon*). Cere dusky (*Hume*). Tarsi feathered; toes clad with long bristles above.

Length 8 inches: tail 2·9; wing 6; tarsus 1·1; bill from gape ·8.

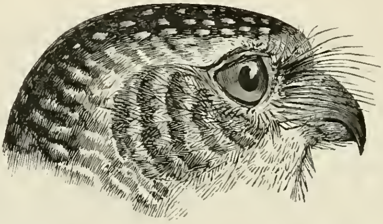

Fig. 77.—Head of *A. brama*, $\frac{3}{4}$.

Distribution. Throughout the Peninsula of India, from the Punjab, Baluchistan, and Sind to Assam and Cachar, and from the base of the Himalayas to the extreme South, but not in Ceylon, though this Owl was obtained by Hume on the island of Rámeswaram. It is also common in the Irrawaddy valley from Prome upwards, and probably throughout the drier parts of Burma.

The Burmese form was separated by Hume as *A. pulchra* on account of smaller size, darker colour, and some supposed differences in the markings; but specimens from the west coast of India are equally small and dark, and the differences in markings are neither important nor constant.

Habits, &c. Owing to its semi-diurnal habits, its noisiness, and its fondness for human habitations, this is the best-known Owl in India. It does not as a rule ascend the hills, and it avoids forests; it keeps to trees in cultivated tracts, especially in gardens, and is commonly found roosting and breeding in the roofs of houses. It lives chiefly on insects, partly on mice, shrews, lizards, or small birds. Its usual call is a double note, but it keeps up a continual chatter at times, especially in the evening, often before sunset, always long before dusk, when it issues from its hiding-place to perch on a pole or fence or telegraph-wire. As Hume says, it is one of the birds that seem to think that telegraph-wires were erected for their sole and especial benefit. Its flight is undulating, but peculiar and easily recognized. This Owlet breeds from February to April, and lays 3 to 5 white oval eggs in holes in trees or a building, or in a cleft in a rock, scantily lined with leaves, grass, or feathers. The average size of the eggs is 1·25 by 1·04.

1181. **Athene blewitti.** *The Forest Owlet.*

Heteroglaux blewitti, *Hume, S. F.* i, p. 468; *Sharpe, Cat. B. M.* ii, p. 141; *Ball, S. F.* v, p. 412; *Hume, Cat.* no. 76 quint.; *Davidson, S. F.* x, p. 292; *Sharpe, Yark. Miss., Aves*, p. 151, pl. xxii.
Carine (Heteroglaux) blewitti, *Ball, S. F.* vii, p. 201.

Coloration very like that of *A. brama*, but the brown spot in front of the eye is faint or wanting; there are no white spots, or only traces of them, on the crown and nape, the nuchal semi-collar is less distinct; the back and lesser and median wing-coverts are uniform brown, the white spots being confined to the greater coverts; there are four broad distinct white bars across the tail-feathers, one being terminal; the brown band across the throat is dark, unbroken, and much broader, and there is a second and still broader band on the breast, partly broken by white edges; farther back on the breast and flanks the brown bars are wider apart, and the middle of the abdomen, legs, and under tail-coverts are pure white. Colours of soft parts not recorded.

Length about 9; tail 2·9; wing 5·7–6; tarsus 1; bill from gape ·85.

A heavier bird than *A. brama*, weighing 8·5 oz., or fully one-third more. The 3rd and 4th quills are longest, the 3rd generally slightly exceeding the 4th, 1st quill about as long as 8th. Tarsus feathered; upper surface of toes with soft feathers, the barbs of which wear away, leaving the shafts only in some specimens.

Distribution. Of this rare Owl the type was obtained by Mr. Blewitt near Sambalpur, and a second specimen by Mr. Ball on the Udet river in Karial, 150 miles farther south. Some years later three specimens were collected by Mr. Davidson at the foot of the Satpuras in North-western Khandesh, where this species was not rare. All were found in thick forest.

1182. **Athene bactriana.** *Hutton's Owlet.*

Athene bactriana, *Blyth, J. A. S. B.* xvi, p. 776 (1847); *Scully, S. F.* iv, p. 130.
Athene persica, *apud Hume, Rough Notes*, p. 407 (*nec Vieill.*).
Athene plumipes, *R. Swinhoe, P. Z. S.* 1870, p. 448.
Carine plumipes, *Sharpe* (subsp.), *Cat. B. M.* ii, p. 137.
Carine bactriana, *Hume, S. F.* v, p. 350; vii, p. 363; *id. Cat.* no 76 ter; *Barnes, S. F.* ix, pp. 215, 452; *C. Swinhoe, Ibis,* 1882, p. 100; *Sharpe, Yark. Miss., Aves*, p. 14, pl. iii.

Coloration. Facial disk mostly white, except the black tips to the loral bristles and the ear-coverts, which are pale brown, streaked longitudinally darker; supercilia pure white; upper parts, wings, and tail dark rufous brown spotted with white, the spots small and elongate on the crown, round and large elsewhere, an imperfect concealed white collar on the hind-neck; wings and tail with broad white bands generally interrupted, sometimes for a considerable distance, at the shafts; lower parts white, a pale brown band with darker spots across the throat, and light brown longitudinal streaks on the breast and upper abdomen.

Bill greenish yellow; cere pale greenish white; iris pure sulphur-yellow; feet greenish, claws bluish horny black (*Stoliczka*). Feet feathered above to ends of toes.

Length 9; tail 3·5; wing 6·25; tarsus 1·1; bill from gape ·85.

Distribution. This form is not more than a local race of *A. glaux*, which again is merely the Eastern desert form of the South European *A. noctua.* One or the other of these is found throughout the warmer temperate portions of the Palæarctic region; the race *A. bactriana*, distinguished solely by its well-plumed toes, occurring in China, Mongolia, Yarkand, and Afghanistan. It is common at Kandahar and has been obtained at Quetta, also in some of the valleys near Pesháwar. Two specimens in the British Museum are labelled Tibet.

Habits, &c. Very similar to those of *A. brama*, but the present form is generally found on rocks, not on trees, and is especially partial to deserted houses and ruins, particularly to the buildings of sun-dried bricks so common throughout Central Asia.

Genus **GLAUCIDIUM,** Boie, 1826.

This genus differs chiefly from *Athene* in having a more rounded wing, and the first quill much shorter, it being the shortest of all the primaries; the 4th is generally longest, but is occasionally exceeded by the 5th or the 3rd. All the Indian species, too, are well distinguished by having the upper surface barred instead of spotted. The cere is swollen and the nostrils tubular, the tarsus feathered and the toes provided above with bristles.

This genus is widely distributed in the tropical and temperate regions of the Old World and in Southern and Central America, but not in Australia.

Key to the Species.

a. No collar: wing exceeding 4·5.
  a'. Abdomen longitudinally striated.
    a''. Back and wings not chestnut .... *G. cuculoides,* p. 305.
    b''. Back and wings chestnut............ *G. castanonotum,* p. 307.
  b'. Abdomen transversely barred .... *G. radiatum,* p. 306.
b. A distinct buff collar: wing under 4 ...... *G. brodiei,* p. 307.

1183. Glaucidium cuculoides. *The Large Barred Owlet.*

Noctua cuculoides, *Vigors, P. Z. S.* 1830, p. 8; *Gould, Cent.* pl. 4.
Athene cuculoides, *Blyth, Cat.* p. 38; *Horsf. & M. Cat.* i, p. 66; *Jerdon, B. I.* i, p. 145; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 17; *Hume, Rough Notes*, p. 414; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 94; xlvii, pt. 2, p. 22; *Hume, N. & E.* p. 71; *id. S. F.* iii, p. 39; v, p. 135; *Inglis, S. F.* v, p. 16: *Wardl. Rams. Ibis*, 1877, p. 454; *C. H. T. Marshall, Ibis*, 1884, p. 408.
Athene whiteleyi, *Blyth, Ibis*, 1867, p. 313; *Blyth & Wald. Birds Burm.* p. 66.
Glaucidium cuculoides, *Sharpe, Cat. B. M.* ii, p. 219; *Hume & Dav. S. F.* vi, p. 37; *Ball, S. F.* vii, p. 201; *Hume, Cat.* no. 79; *Scully, S. F.* viii, p. 232; *Oates, B. B.* ii, p. 162; *id. in Hume's N. & E.* 2nd ed. iii, p. 113; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 572; v, p. 558; *Hume, S. F.* xi, p. 23.

Burra dundul, H. (Chamba); *Tangpum*, Lepcha.

Coloration. Lores whitish with black tips; a narrow band over the eye white; sides of head, including ear-coverts, crown, and all the upper parts, olive-brown, sometimes rufous, with white, buff, or rufous cross-bars; some white patches on the outer scapulars and larger wing-coverts; quills brown, with pale bars, becoming whitish spots on the inner and outer webs, and growing whitish throughout on the secondaries, which are tipped with the same colour; tail dark brown, with from 6 to 8 white bars, including the terminal one; the bars are generally interrupted and broken at the shafts; chin and moustachial stripe and the lower throat white; remainder of throat, breast, flanks, and legs dark olive-brown, with white or pale rufous bars; abdomen white, with rather irregular olive or rufous streaks.

Young birds are rufescent brown, with small buff spots on the head and nape; the back and breast not barred, the only bars being on the wings and tail.

Bill pale green; cere brown; irides bright yellow; legs greenish yellow (*Oates*).

Length about 9; tail 3·4; wing 5·8; tarsus 1; bill from gape ·8.

Distribution. Throughout the Himalayas as far west as Hazára, chiefly at elevations from 2000 to 6000 feet, also in Assam, Cachar, Manipur, and throughout Burma as far south as Tavoy, being very common in Northern Tenasserim. This Owl is occasionally met with in Bengal, and has been recorded at Calcutta and in the Rajmehal hills, whilst Hume received a specimen from the southern portion of the Mirzapur district. *G. whiteleyi*, which appears to be only a large variety, is found throughout Southern China.

Habits, &c. This is one of the least nocturnal of all Owls, and may often be seen in full sunlight, sometimes even at midday, sitting on trees or stumps, or moving about and feeding in shady gardens or jungle. It keeps to thin tree- or bamboo-jungle or gardens, and feeds partly on insects, but also on small birds and mammals. The cry is a peculiar cackle, like a laugh, called by

Hume a "chuckling vibrating call." The breeding-season is from March to May; the eggs, 4 in number, are deposited in a hollow or hole in a tree without any nest, or with a few dead leaves or touchwood as lining. The eggs are round, pure white and glossy, and measure about 1·41 by 1·19.

1184. **Glaucidium radiatum.** *The Jungle Owlet.*

Strix radiata, *Tickell, J. A. S. B.* ii, p. 572 (1833).

Athene erythropterus, *Gould, P. Z. S.* 1837, p. 136.

Athene radiata, *Blyth, J. A. S. B.* xv, p. 281; *id. Cat.* p. 39; *Horsf. & M. Cat.* i, p. 67; *Moore, P. Z. S.* 1854, p. 262; *Jerdon, B. I.* i, 143; *Hume, Rough Notes*, p. 409; *Butler, S. F.* iii, p. 450; *Anderson, P. Z. S.* 1875, p. 27; 1876, p. 781.

Athene malabarica, *Blyth, J. A. S. B.* xv, p. 280; *id. Cat.* p. 39; *Jerdon, B. I.* i, p. 144; *Hume, Rough Notes*, p. 413.

Glaucidium radiatum, *Sharpe, Cat. B. M.* ii, p. 217; *Ball. S. F.* vii, p. 201; *Hume, Cat.* no. 77; *Legge, Birds Ceyl.* p. 152; *Reid, S. F.* x, p. 17; *Davidson, ibid.* p. 292; *Davison, ibid.* p. 344; *Barnes, Birds Bom.* p. 76; *Littledale, Jour. Bom. N. H. Soc.* i, p. 196; *Oates, in Hume's N. & E.* 2nd ed. iii, p. 112.

Glaucidium malabaricum, *Sharpe, Cat. B. M.* ii, p. 218 (subsp.); *Legge, S. F.* iv, p. 242; *Hume & Bourd., ibid.* p. 372; *Hume, Cat.* no. 78; *Vidal, S. F.* ix, p. 38; *Hume, ibid.* p. 39; *Butler, ibid.* p. 377; *Barnes, Birds Bom.* p. 76.

Jangli Chogad, H.; *Kalakasut*, Oude; *Chota kalpencha*, Beng.; *Adavi paini gante*, Tel.; *Nattah*, Mal.

Coloration. Lores whitish with black tips; sides of head and neck, crown, and whole upper surface dark olive-brown, more or less tinged with rufous and narrowly barred with pale rufous or white, the bars much closer than in *G. cuculoides*; some white spots on outer scapulars and on greater coverts; wings blackish brown, both webs indented with chestnut spots, becoming bars on the secondaries; inner webs and sometimes the outer also becoming entirely rufous towards the base; tail blackish, with narrow white cross-bars, interrupted and often broken at the shafts; chin and a band on each side of the throat behind the ear-coverts, a large patch on the upper breast, middle of breast, and abdomen white; rest of lower surface banded dark olive and white or pale rufous, the dark bars becoming wider apart behind on flanks and disappearing on the legs and lower tail-coverts.

Bill greenish horny; cere greenish; irides yellow; feet greenish yellow to green.

Length 8; tail 2·9; wing 5·1; tarsus ·9; bill from gape ·75.

G. malabaricum is a rufous race, found, together with typical *G. radiatum* and all intermediate varieties, on the Malabar coast.

Distribution. Throughout the greater part of India in well-wooded jungly tracts, from the lower Himalayas to the extreme South, and also in Ceylon. This species is wanting in the Punjab, Sind, Rajputana (except at Mount Abu), rare or wanting in the

Bombay Deccan, Western Central Provinces, and Carnatic; common in the N.W. Provinces, parts of Guzerat, Khandesh, Chutia Nagpur, and throughout the Malabar coast, and also in Ceylon. It has been included in lists from Malacca, but probably in error.

Habits, &c. Like other species of *Glaucidium* this is often seen and heard in daylight. It is bold and sagacious, feeding on small birds as well as on lizards and insects. Its flight is rapid and strong, and its call peculiar and protracted. It breeds from March to May, in holes in trees, unlined, laying 2 or 3 white smooth eggs without gloss, that measure about 1·25 by 1·06.

1185. **Glaucidium castanonotum.** *The Chestnut-backed Owlet.*

Athene castanopterus, *apud Blyth, J. A. S. B.* xv, p. 280; *nec Horsf.*
Athene castanotus, *Blyth, Cat.* p. 39 (1849); *Layard, A. M. N. H.* (2) xii, p. 105.
Athene castaneonotus, *Hume, Rough Notes,* p. 412; *Holdsworth, P. Z. S.* 1872, p. 418.
Glaucidium castanonotum, *Sharpe, Cat. B. M.* ii, p. 215; *Hume, S. F.* vii, p. 364; *id. Cat.* no. 78 bis; *Legge, Birds Ceyl.* p. 149, pl. iv; *Oates in Hume's N. & E.* 2nd ed. iii, p. 112.

Coloration. Similar to *G. radiatum*, except in having the back, rump, scapulars, and whole upper surface of the wings overlaid with chestnut, so that the narrow cross-barring is seen more or less distinctly through it, and in having longitudinal olive streaks on the abdomen, and traces of them on the lower tail-coverts and legs instead of cross-bars. The rufous bars on the wing-feathers are narrower and more numerous, and they extend across all the feathers, whilst the basal portions of the inner webs are buff instead of rufous. The white spots on the wing-coverts and scapulars are often wanting, but occasionally well developed.

Bill greenish horn-colour; cere dusky greenish; iris yellow; feet olivaceous, soles yellowish; claws brown (*Legge*).

Length about 7·5; tail 2·6; wing 5·2; tarsus ·85; bill from gape ·75.

Distribution. Peculiar to Ceylon, where this Owl is chiefly found in the hills.

Habits, &c. These differ very little, if at all, from those of the last two species. The food consists chiefly of insects and lizards, occasionally of small mammals and birds. The cry is a repeated guttural sound often heard long after sunrise and before sunset. The eggs are laid in a hole in the trunk or branch of a tree from March to May; they are (so far as is known) two in number, white, oval, and about 1·37 by 1·11.

1186. **Glaucidium brodiei.** *The Collared Pigmy Owlet.*

Noctua brodiei, *Burton, P. Z. S.* 1835, p. 152.
Noctua tubiger, *Hodgs. As. Res.* xix, p. 175 (1836).
Athene brodiei, *Blyth, Cat.* p. 40; *Horsf. & M. Cat.* i, p. 66.
Glaucidium brodiei, *Jerdon, B. I.* i, p. 146; *Blyth, Ibis,* 1866, p. 258;

Stoliczka, J. A. S. B. xxxvii, pt. 2, p. 17; *Hume, Rough Notes,* p. 417; *id. Ibis,* 1871, p. 26; *Jerdon, Ibis,* 1871, p. 349; *Blanford, J. A. S. B.* xli, pt. 2, p. 155; *Cock & Marsh. S. F.* i, p. 349; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 152; xlv, pt. 2, p. 68; *Sharpe, Cat. B. M.* ii, p. 212; *Blyth & Wald. Birds Burm.* p. 67; *Hume & Dav. S. F.* vi, p. 39; *Hume, Cat.* no. 80; *Bingham, S. F.* ix, p. 148; *Oates, B. B.* ii, p. 160; *id. in Hume's N. & E.* 2nd ed. iii, p. 111; *Sharpe, P. Z. S.* 1887, p. 434; *Hume, S. F.* xi, p. 23; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 558; vii, p. 375.

Glaucidium immaculatus, *Hume, Rough Notes,* p. 420 (1870).

Athene minutilla, *Gould, Birds of Asia,* i, pl. 15 (1870).

Coloration. Lores white with black tips, a narrow white supercilium; cheeks, ear-coverts, and crown of head olive-brown (varying to blackish), with short transverse buff, white, or rufous bars and spots; a black spot on each side of the nape, followed by a fulvous half-collar formed by deep buff feathers with brown borders; remainder of upper parts olive or rufous-brown, often more rufous than the head, with narrow white, buff, or rufous cross-bars; some large white spots on the outer scapulars; quills dark brown, with buff, rufous, or white spots on the outer, and partial bars on the inner margins, the two united by subobsolete pale bands, the first two primaries and tips of the others unspotted; secondaries tipped with buff; tail dark brown, with white, buff, or rufous bars, interrupted at the shafts; chin and sides of the neck behind the ear-coverts white, followed by a broad olive band barred with white or rufous across the throat; upper breast and a stripe down the middle of breast and abdomen to lower tail-coverts white; sides of breast barred dark olive and buff or rufous; abdomen white, with large rufous or olive spots, dark at the edges; legs olive, with pale bars.

Young birds are much more uniformly coloured above; they have only a few buff streaks on the head, and no bars either there or on the mantle. This is the *G. immaculatum* of Hume, *Athene minutilla* of Gould.

The birds of the Western Himalayas are browner, as a rule, those of the Eastern Himalayas more rufous, some Sikhim skins being tinged with ferruginous buff, but other Sikhim birds are blackish olive, not rufous at all. Assamese and Burmese birds also vary.

Bill, cere, and feet yellowish green; iris bright yellow; claws horny (*Bingham*).

Length about 6·5; tail 2·5; wing 3·6; tarsus ·8; bill from gape ·7. Males are a little smaller than females, and Burmese birds are rather less in dimensions than Himalayan.

Distribution. Throughout the Himalayas as far west as Murree, being found in Sikhim from the base of the hills to a considerable elevation, but chiefly in the Western Himalayas between 5500 and 7500 feet. This species occurs also in the hills south of the Assam valley, and in Karennee and the Tenasserim ranges, again at Perak in the Malay Peninsula, and in Southern China.

Habits, &c. This is a bird of hill-forests, living partly on insects, partly on birds, small mammals, and, according to Stoliczka, lizards and frogs. Its call, first ascertained by Hutton, consists of four clear whistled notes, *whoo-whoo whoo-whoo,* easily imitated. Like other species of *Glaucidium,* this Owl is somewhat diurnal in its habits. It lays four round white eggs, generally about May or June, in holes in trees.

Genus **NINOX**, Hodgson, 1837.

Of all the genera of Owls this is, perhaps, the most Hawk-like in general appearance, owing to the ruff and facial disk being quite obsolete. The wings are longer and more pointed than in *Athene* or *Glaucidium,* the 3rd or 4th quill is longest and the 1st about as long as the 7th. The tail is slightly lengthened, and rounded at the end. The cere is swollen, with the nostril close to the anterior margin. Tarsus feathered, upper surface of toes thinly furnished with bristles.

This genus is found throughout the Oriental region, the greater part of the Australian region, New Zealand, and Madagascar. Most of the species, including the two found within Indian limits, are almost uniform chocolate-brown above.

Key to the Species.

a. Lower parts partly white, partly brown or rufous; quills barred	*N. scutulata,* p. 309.
b. Lower parts almost entirely brown; quills not barred	*N. obscura,* p. 311.

1187. **Ninox scutulata.** *The Brown Hawk-Owl.*

Strix scutulata, *Raffl. Tr. Linn. Soc.* xiii, p. 280 (1822).
Strix hirsuta, *Temm. Pl. Col.* p. 289 (1824).
Strix lugubris, *Tickell, J. A. S. B.* ii, p. 572 (1833).
Ninox nipalensis, *Hodgs. Madr. Jour. L. S.* v, p. 23, pl. 14 (1837); *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 68.
Ninox scutulata, *Blyth, Cat.* p. 38; *Jerdon, B. I.* i, p. 147; *Hume, Rough Notes,* p. 420; *Jerdon, Ibis,* 1871, p. 350; *A. Anderson, P. Z. S.* 1875, p. 27; *Sharpe, Cat. B. M.* ii, p. 156; *Blyth & Wald. Birds Burm.* p. 67; *Hume, S. F.* iv, pp. 286, 373; *Armstrong, ibid.* p. 303; *Tweeddale, Ibis,* 1877, p. 287; *Hume, Cat.* no. 81 bis; *Legge, Birds Ceyl.* p. 145; *Davison, S. F.* x, p. 345; *Oates, B. B.* ii, p. 159; *id. in Hume's N. & E.* 2nd ed. iii, p. 111; *Gurney, Ibis,* 1884, p. 169; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 572; v, p. 558.
Athene scutulata, *Horsf. & M. Cat.* i, p. 68; *Layard, A. M. N. H.* (2) xii, p. 106.
Ninox hirsuta, *Holdsw. P. Z. S.* 1872, p. 418; *Hume, S. F.* ii, p. 151; *Ball, ibid.* p. 383; *Hume & Oates, S. F.* iii, p. 40; *Fairbank, S. F.* iv, p. 254.
Ninox lugubris, *Sharpe, Cat. B. M.* ii, p. 154; *Anderson, Yunnan Exped., Aves,* p. 577; *Davidson & Wend. S. F.* vii, p. 76; *Ball, ibid.* p. 201; *Cripps, ibid.* pp. 253, 256; *Hume, Cat.* no. 81; *Vidal, S. F.* ix, p. 42; *Butler, ibid.* p. 377; *Reid, S. F.* x, p. 17; *Barnes, Birds Bom.* p. 77.

Ninox burmanica, *Hume, S. F.* iv, p. 285; *Hume & Dav. S. F.* vi, p. 40; *Hume, Cat.* no. 81 ter; *Bingham, S. F.* ix, p. 148; *Hume, ibid.* p. 245; *Cripps, S. F.* xi, p. 24.

Ninox innominata, *Hume, S. F.* iv, p. 286; v, p. 16.

Andaman Race.

Ninox affinis, *Tytler, Beavan, Ibis,* 1867, p. 316; *Hume, Rough Notes,* p. 421; *Walden, Ibis,* 1874, p. 129, pl. v; *Sharpe, Cat. B. M.* ii, p. 155; *Hume, S. F.* ii, p. 152; iv, p. 286; vii, p. 364; *id. Cat.* no. 81 quat.; *Gurney, Ibis,* 1884, p. 170.

Ninox hirsuta (*Temm.*), *Ball, S. F.* i, p. 54.

Choghad besra, H.; *Kal pechak* or *páncha,* Beng.; *Moh chírai,* Assamese; *Tang-kyi-per-chi-ok,* Lepcha; *Paini gante vestam,* Tel.

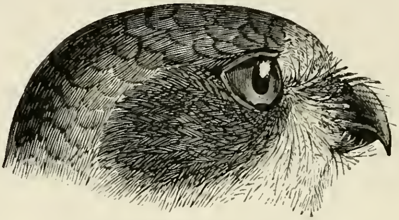

Fig. 78.—Head of *N. scutulata,* ¾.

Coloration. Lores and feathers on anterior portion of forehead white with black ends; upper parts with the sides of the head and neck chocolate-brown, varying in depth of tint, the head and neck very often greyer brown; some large concealed white patches or bars on the outer scapulars; quills brown, with pale bands that disappear near the ends of the primaries, but become white bars on the inner webs of the secondaries and on both webs of the tertiaries; the tail alternately barred with blackish and pale greyish brown and tipped whitish or white, the alternating bars subequal in breadth, and those of each colour about 5 (from 4 to 6) in number; ground-colour of lower parts white; the chin, throat, and upper breast with broad brown median stripes, which pass into large heart-shaped spots on the abdomen and flanks, and these sometimes assume the form of bars on the thigh-coverts; lower tail-coverts chiefly or wholly white; axillaries barred white and brown or buff and brown, or sometimes orange-buff throughout.

Bill bluish black; cere dull green; irides bright yellow; feet dull yellow; claws horny brown.

Length about 12·5; tail 5·25; wing 8; tarsus 1; bill from gape ·9.

There is much variation in size, Northern specimens as usual being larger than Southern. In Himalayan and Burmese birds the wings measure 8 to 8·75, in Ceylonese and Malaccan 7·5 to 8, in the little Andaman variety only 6·6 to 7·6.

As Hume has shown (S. F. iv, p. 285; ix, p. 42, &c.), *N. lugubris* cannot be distinguished from *N. scutulata.* The former is rather paler, with a greyer head, and is found in India and Burma generally, chiefly in the less damp parts of the country; the latter, of a deeper more uniform brown colour above, occurs in Malabar, Ceylon, parts of Burma, &c., where the rainfall is heavier. *N. affinis*, from the Andamans and Nicobars, is merely a small insular race, some supposed differences in colour, as Hume has also clearly shown, being individual.

Distribution. Throughout the Oriental region. This Owl is common in the well-wooded parts of India, rare in the tracts less furnished with trees, such as the Bombay Deccan, and parts of the North-west Provinces, wanting, except at Mount Abu, in Rajputana, Sind, and the Punjab. It has not been observed in the Himalayas beyond the lower forests, but it is generally distributed in Burma and Ceylon.

Habits, &c. The Brown Hawk-Owl keeps much to thick trees during the day; it is chiefly nocturnal, but is occasionally seen sitting on a stump or branch in the evening after sunset or in the morning. It lives chiefly on insects, which it not unfrequently captures in the air, but it also feeds on mice, lizards, &c. The call is said by Captain Legge to be a not unmelodious hoot, which he writes *whōō-wuk*, and he doubts if this Owl utters cries like a strangling cat, or a hare when caught by hounds, as stated by Tickell, Buchanan Hamilton, and others. Mr. Reid, however, who wounded one, noticed that it cried like a hare. That peculiar strangled cries are not uncommon at night in the forests of India, I know from having heard them; I never succeeded in detecting the bird by which they are made, though I have no doubt it is an Owl. Very little is known of the breeding of *N. scutulata*, except that it rears its young in holes in trees without any lining, and lays nearly spherical white eggs.

1188. **Ninox obscura.** *Hume's Brown Hawk-Owl.*

Ninox obscura, *Hume, S. F.* i, p. 11 (1873); *Ball, ibid.* p. 55; *Hume, S. F.* ii, p. 153; *Walden, Ibis,* 1874, p. 129, pl. iv; *Sharpe, Cat. B. M.* ii, p. 177; *Hume, Cat.* no. 81 quint.

Coloration. Very dark chocolate-brown above and below, growing lighter and more rufous on the abdomen; a few small whitish spots or bars occur on the flanks and abdomen (often only to be seen by raising the overlying feathers), and the lower tail-coverts are barred with white; feathers of the lores, forehead, and chin bristly, whitish, or white at the base, black at the ends; quills uniform deep brown; tail-feathers deep brown, with about four narrow pale greyish cross-bands and a whitish tip. The head above is often a little darker than the back.

Bill blackish; cere, ridge of upper mandible and tip of lower green; irides yellow; feet yellow; claws black.

Length 11·5; tail 5; wing 8·75; tarsus 1; bill from gape 1.

Distribution. The Andaman and Nicobar Islands. The nearest ally is the Papuan *N. theomacha.*

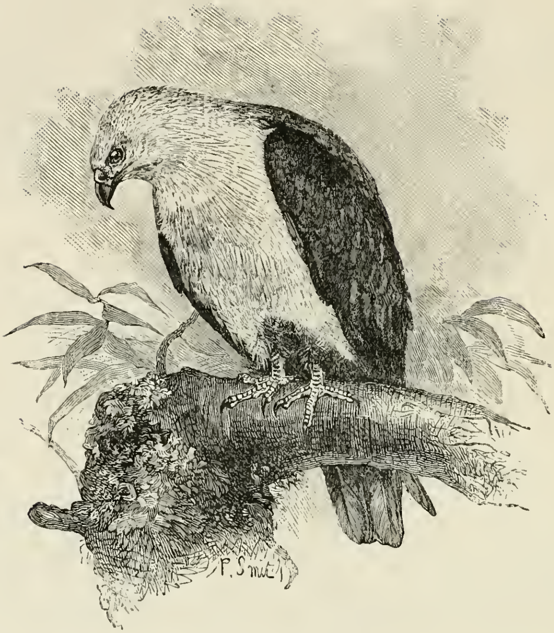

Fig. 79.—*Haliastur indus.*

Order XI. ACCIPITRES.

The diurnal Birds of Prey, if only Indian genera are taken into consideration, form a very natural and well-marked group, about which the only doubt that can arise is whether the Osprey is entitled to higher rank than that of forming a distinct family. The difficult questions as to the relationship of the American Vultures or Condors (*Cathartidæ*) and of the African Secretary Bird (*Serpentarius*) do not concern us, and the Owls have now by general consent been placed in a distinct order.

In the Accipitres the bill is strong, the upper mandible considerably longer than the lower, with the culmen much curved, so that the end is hooked and the tip perpendicular; the basal portion is covered with a membrane or cere, in which the nostrils are pierced. The feet are strong and furnished with powerful claws. A hallux is always present, and there is a tufted oil-gland. The spinal feather-tract is well-defined on the neck. There are always 11 primaries. The *flexor longus hallucis* leads to the hallux and the *flexor perforans digitorum* to the other three digits, but the two tendons are united by a fibrous vinculum. The ambiens muscle and the femoro-caudal are present, the accessory femoro-caudal, semitendinosus, and accessory semitendinosus are absent. The posterior border of the sternum is not notched, but there is sometimes a foramen on each side within the border. There are no basipterygoid processes, and the palate is desmognathous. Both carotids are present, and there are cæca of the intestine. The nest is generally of sticks, and is placed on a tree or on rocks. The young are hatched helpless and covered with down; they remain in the nest for a considerable time. The female throughout the order is almost always larger than the male.

Accipitrine birds may be thus divided into three families :—

a. No aftershaft to contour-feathers; outer toe reversible	**Pandionidæ**, p. 313.
b. An aftershaft present; outer toe not or very slightly reversible.	
a′. Crown of head naked or covered with down.	**Vulturidæ**, p. 315.
b′. Crown of head feathered	**Falconidæ**, p. 327.

Family PANDIONIDÆ.

The Osprey differs from all other Accipitrine birds in having the outer toe reversible, and in having no aftershaft to the feathers.

The characters of the tibia and tarsus (tarso-metatarsus and tibio-tarsus) have been shown by Lydekker (Cat. Foss. Birds B. M. p. 18) to be Owl-like, as are the other distinctive peculiarities just mentioned, and it is unquestionable that the Osprey forms a link between Accipitrine birds and Owls, and that it differs from the *Falconidæ* much more than the Vultures do.

Genus **PANDION.**

Bill moderate, with the tip produced and much hooked; festoon variable; nostrils small, narrow, oblique. Wings long and pointed; third quill longest, extending beyond the end of the tail, which is nearly even. Tarsus short, stout, reticulated, without scutation; toes with scutæ above only near the ends, covered with prickly scales beneath; claws rounded beneath, much curved, subequal in size.

A single species.

1189. **Pandion haliaëtus.** *The Osprey.*

Falco haliaëtus, *Linn. Syst. Nat.* i, p. 129 (1766).
Pandion haliaëtus, *Blyth, Cat.* p. 29; *Horsf. & M. Cat.* i, p. 52; *Jerdon, B. I.* i, p. 80; *Hume, Rough Notes,* p. 234; *id. S. F.* i, p. 159; xi, p. 11; *id. Cat.* no. 40; *Sharpe, Cat. B. M.* i, p. 449; *Hume & Dav. S. F.* vi, p. 16; *Ball, S. F.* vii, p. 199; *Vidal, S. F.* ix, p. 32; *Butler, ibid.* p. 373; *Legge, Birds Ceyl.* p. 122; *Gurney, Ibis,* 1882, p. 594; *Oates, B. B.* ii, p. 220; *Barnes, Birds Bom.* p. 38.

Machariya, Machmanga, H.; *Macharang,* Nepal; *Machmoral, Bala,* B.; *Koramin gedda,* Tel.; *Hegguli,* Yerkli; *Verali-addi-pong,* Tam.; *Pantiong,* Lepcha; *Woon-let,* Burm.

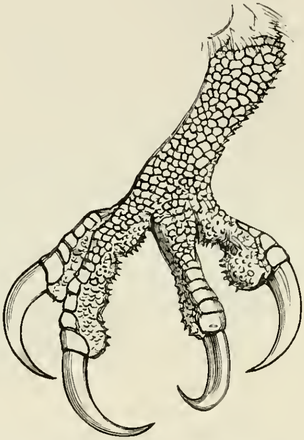

Fig. 80.—Left foot of *P. haliaëtus,* ½.

Coloration. Head and neck white, the feathers along the middle of the crown and nape, and sometimes at the sides, with conspicuous brown shaft-lines and tips; a broad dark brown band from each eye down the side of the neck; upper parts glossy brown; tail the same, the rectrices more or less distinctly barred with paler brown above, with white below, especially on the inner webs of all except the middle pair; in old birds the bars tend to become obsolete; quills blackish; lower parts white, except on the upper breast, where the feathers are brown with dark shafts and white edges, that are sometimes very broad, but occasionally wanting; wing-lining brown, mixed with white or fulvous.

In the young the dark feathers of the dorsal surface are pale-edged, the tail is more closely and more distinctly barred, and the breast either unmarked or only slightly spotted with brown.

Bill black; cere, gape, and eyelids dull greenish blue; irides bright yellow; legs pale greenish or yellowish; claws black.

Length of females about 22 inches; tail 9; wing 20; tarsus 2·2; bill from gape 1·6. Male slightly smaller.

Distribution. Almost world-wide; found in suitable localities throughout India, Ceylon, and Burma.

Habits, &c. Ospreys live on fish, and haunt, in India, the coast, backwaters, rivers, and large pieces of water of all kinds. They are generally seen perched on trees, occasionally on a stone, or else circling or flying over water in search of food. They capture fishes near the surface of the water by dropping on them from a height with a great splash, and often carry off prey of considerable size, but instances are on record of their being drowned by large fish, so that sometimes at all events they are unable to extricate their claws. Though nests have been seen in the Himalayas by Hume and others, and by Jerdon in an unrecorded part of the country, no eggs have been taken, and most Indian Ospreys are cold-weather visitants and do not breed in the country. They lay generally three eggs, white, much spotted and blotched with dull red, and measuring about 2·4 by 1·77, in a large nest of sticks mixed with various materials and placed on a tree or rock.

Family VULTURIDÆ.

Head and neck more or less bare or only clothed with short stubby down; never any true feathers on crown of head (*Sharpe*).

The above appears the only really distinctive character by which Vultures are distinguished from Falcons, Eagles, and Hawks. Vultures have the crop covered with short feathers, and generally a more or less distinct elongate ruff round the neck at the end of the naked portion. The bill (except in *Neophron*) is strong, deep, and compressed, with the culmen much curved; the tip is always hooked, and the cere large and horny. There are 15 cervical vertebræ, or one more than is usual in *Falconidæ*. The wings are long; tail-feathers 12 or 14, with strong shafts, that, owing to wear, always project at the ends. The tarsi are partly feathered, the naked portions covered with granular scales, with larger transverse scutes on the distal phalanges of the toes; the inner and outer toes are subequal, and the middle and outer united by membrane; claws blunt, not much curved.

Typical Vultures (the genus *Neophron* differs in some respects) resemble each other closely in habits. As is well-known, they feed on dead animals, and congregate in an extraordinary manner wherever a carcase is exposed. The way in which they assemble, apparently from all parts of the air, in a place where a few minutes previously not one was in sight, is a wonderful spectacle. When in search of food, Vultures and some other Accipitrine birds soar and wheel slowly in large circles, very often at an elevation far beyond the reach of human vision, as was shown by the observation of Colonel Tennant, who at Roorkee in 1875 (S. F. iii, p. 419) noticed that birds at a height of some miles often passed across the field of his telescope. As Jerdon and other writers have pointed out, the Vultures are dependent for the discovery of their food upon their eyesight, the more distant birds being attracted by seeing those nearer to the carcase flying in a manner that shows them to have found out its position. The actual discovery is doubtless generally made by Crows or Kites, and the Vultures obtain information from the movements of the smaller birds.

On the ground Vultures are clumsy, heavy, and ungainly, as foul in aspect as in smell; but on the wing no bird has a grander or more powerful flight, and none affords a better opportunity of studying the position and movements of a bird when flying. Amongst the rocky crags to which Vultures resort to roost and, in many cases, to breed, it is often easy to stand on the edge of a cliff where they pass by within a few feet, and as each great bird sweeps past, regulating its course by its tail, and occasionally moving its head slightly as it investigates the different objects that present themselves, to notice how steady and unchanging is the position of the extended wings and flight-feathers, and to observe how entirely the support of the bird is due to the resistance of the air.

Vultures are confined to the tropical and warm temperate regions of Asia, Europe, and Africa; their American representatives, the Condors and their allies, being now placed in a distinct order by most ornithologists. The family is represented in India by species of all known genera except *Lophogyps*. By some writers *Neophron* is regarded as forming a distinct subfamily, but the difference is scarcely more than generic.

Key to the Genera.

a. Bill stout; height of upper mandible approximately the same as length of cere on culmen.	
a'. Nostril round or oval; tail-feathers 12.	
a''. No neck-wattle	Vultur, p. 316.
b''. A fleshy wattle on each side of the neck.	Otogyps, p. 318.
b'. Nostril a vertical narrow slit.	
c''. Tail-feathers 14......................	Gyps, p. 319.
d''. Tail-feathers 12	Pseudogyps, p. 324.
b. Bill slender; nostril elongate, horizontal	Neophron, p. 325.

Genus **VULTUR**, Linn., 1766.

Bill short, strong, and deep, curving from the end of the cere; nostrils round or slightly curved; head broad, covered with down, which is longer on the nape; neck naked, ruff very small, ascending on the back of the neck.

A single species.

1190. **Vultur monachus.** *The Cinereous Vulture.*

Vultur monachus, *Linn. Syst. Nat.* i, p. 122 (1766); *Blyth, Cat.* p. 32; *Horsf. & M. Cat.* i, p. 1; *Jerdon, B. I.* i, p. 6; *id. Ibis,* 1871, p. 234; *Hume, Rough Notes,* p. 1; *A. Anderson, P. Z. S.* 1871, p. 675; *Adam, S. F.* i, p. 367; *Sharpe, Cat. B. M.* i, p. 3; *Butler, S. F.* iii, p. 441; v, p. 226; *Blanford, S. F.* v, p. 245; *Hume, S. F.* vii, p. 321; *id. Cat.* no. 1; *Scully, S. F.* viii, p. 217; *Barnes, S. F.* ix, pp. 214, 450; *C. H. T. Marshall, Ibis,* 1884, p. 405; *Barnes, Birds Bom.* p. 2; *St. John, Ibis,* 1889, p. 149.

Great Brown Vulture, Jerdon: *Kála-gidh,* H.; *Gut panom,* Lepcha.

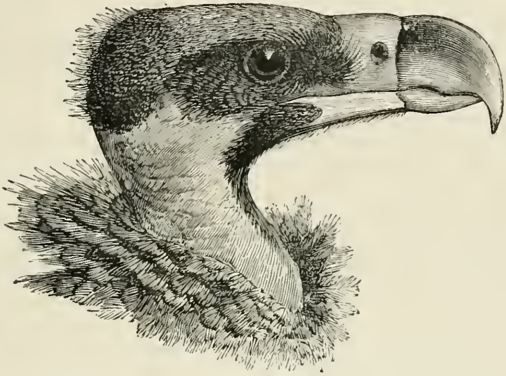

Fig. 81.—Head of *V. monachus,* ⅓.

Coloration. Blackish brown throughout, with, in freshly moulted plumage, a ruddy gloss on the mantle; under surface sometimes darker than upper; quills and tail almost black, occiput and lower tail-coverts paler. Young birds are paler and browner.

Bill blackish brown; cere pale mauve; irides brown; naked skin of neck livid flesh-colour; legs and feet creamy or pearl-white.

Length about 42 inches; tail 17; wing 30; tarsus 5.

Distribution. Southern Europe, Northern Africa, and eastward through South-western Asia and parts of Central Asia to India and China. In India this bird is resident in Afghanistan and the Himalayas, and visits North-western India in the cold season, having been observed in the Punjab, Sind, North-west Provinces, and Oude, Guzerat near Ahmedabad, Mhow, and Saugor. It ranges in the Himalayas as far east as Bhután.

Habits, &c. Those of the family. The nesting does not appear to have been recorded within Indian limits, though there can be no doubt that this bird breeds in the Himalayas. In Europe it breeds about February or March, sometimes on cliffs, more often in trees; builds a huge nest of sticks, and lays a single egg (very rarely two) richly marked with dark red, and measuring about 3·7 by 2·6.

Genus **OTOGYPS**, Gray, 1841.

Head and neck bare, without any down in adults; a wattle of skin on each side of the neck behind the ear; ruff very small; bare neck extending farther down than in *Vultur*, to which genus the present is very similar.

Two species, one African, the other Indian.

1191. **Otogyps calvus.** *The Black Vulture or Pondicherry Vulture.*

Vultur calvus, *Scop. Del. Flor. et Faun. Insub.* ii, p. 85 (1786); *Hume, Rough Notes*, p. 8; *Blyth, Ibis*, 1866, p. 232; *Adam, S. F.* i, p. 367; *A. Anderson, P. Z. S.* 1871, p. 676; 1875, p. 17; *Blyth, Birds Burm.* p. 64.

Vultur ponticerianus, *Lath. Ind. Orn.* i, p. 7 (1790); *Sykes, P. Z. S.* 1832, p. 77; *Jerdon, Mad. Jour. L. S.* x, p. 63; *Gray in Hardw. Ill. Ind. Zool.* i, pl. 15, fig. 1.

Otogyps calvus, *G. R. Gray, Gen. B.* i, p. 6; *Blyth, Cat.* p. 32; *Horsf. & M. Cat.* i, p. 2; *Jerdon, B. I.* i, p. 7; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Hume, N. & E.* p. 1; *Davidson, S. F.* ii, p. 336; *Sharpe, Cat. B. M.* i, p. 14; *Brooks, S. F.* iii, p. 228; *Butler, S. F.* iii, p. 441; vii, p. 179; ix, p. 369; *Blanford, S. F.* v, p. 245; *Hume & Dav. S. F.* vi, p. 1; *Davidson & Wend. S. F.* vii, p. 72; *Gurney, ibid.* p. 170; *Ball, ibid.* p. 196; *Cripps, ibid.* p. 240; *Hume, Cat.* no. 2; *Bingham, S. F.* viii, p. 190; ix, p. 142; *Scully, S. F.* viii, p. 217; *Doig, ibid.* p. 370; *Vidal, S. F.* ix, p. 29; *Davison, S. F.* x, p. 331; *Hume, S. F.* xi, p. 2; *Oates, B. B.* ii, p. 171; *id. in Hume's N. & E.* 2nd ed. iii, p. 209; *Barnes, Birds Bom.* p. 3; *id. Jour. Bom. N. H. Soc.* i, p. 38; iii, p. 206.

Ráj-gidh, Mulla-gidh, Bhaonra, H.; *Lung-nong-loong,* Lepcha; *Raj Sagun,* Beng.; *Nella Borawa,* Tel.; *Rannapanta,* Yerkli.

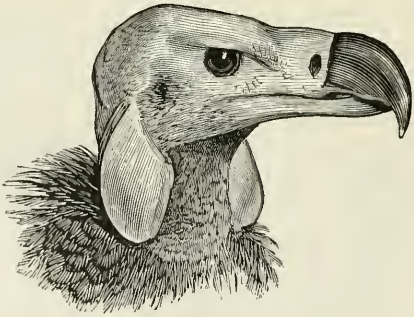

Fig. 82.—Head of *O. calvus*, $\frac{1}{3}$.

Coloration. Adult. Scattered black hairs on the nape and sides of the head and on the throat, more closely set around the ear-orifice; head above and neck bare; plumage generally glossy black, brownish on the scapulars, lower back, and rump; secondary quills brown with black tips; ruff inconspicuous, black, the feathers white at the base; crop-patch dark brown, surrounded, except anteriorly, by white down; upper thighs and anterior part of flanks white and downy.

The young are brown above and below; feathers of the breast and abdomen with paler edges; under tail-coverts whitish; the ruff of rather longer brown feathers. The crown of the head is covered with white down.

Bill dark brown; cere, skin of head and neck deep yellowish red, a conspicuous naked patch on each side of the crop and a large naked oval area in front of each thigh the same; irides red-brown or yellow; legs dull red (legs china-white, *Oates*).

Length about 32; tail 10·5; wing 23; tarsus 4·5; mid toe without claw 3·5; bill from gape to tip 2·75.

Distribution. Throughout India and Burma, but not in Ceylon, ranging to the south-east into the Malay Peninsula, Siam, and Cochin China. Rare in the Punjab and Sind, but found in the lower Himalayas.

Habits, &c. This fine Vulture is nowhere very abundant, usually one or two come to feed on a carcase with scores of *Gyps indicus*, *G. tenuirostris*, or *Pseudogyps bengalensis*; these, being smaller and weaker, give way before the present species, which is consequently known as the King Vulture. It breeds on trees from the latter end of January to the middle of April, making a large platform of sticks, and laying a pure white egg (spots and streaks are of very rare occurrence in this species) that measures about 3·34 by 2·6.

Genus **GYPS**, Savigny, 1810.

This genus contains several species, and includes several of the common Indian Vultures. The head is narrower and the bill longer than in the two preceding genera; the naked neck is longer, and there is a well-marked ruff at the base of the naked portion. The nostril is very narrow and vertically (transversely) or obliquely elongate. This genus, too, is distinguished from the other Vultures by having 14 tail-feathers.

Species of *Gyps* are found throughout Africa, Southern and South-eastern Europe, South-western and Central Asia, India and Burma. Four species occur within our limits.

Key to the Species.

a. Larger: wing 27–31 inches.
  a'. Third primary longest; lower plumage with narrow shaft-stripes .... *G. fulvus*, p. 320.
  b'. Fourth primary longest; shaft-stripes on lower plumage very broad............ *G. himalayensis*, p. 321.
b. Smaller: wing 22–25·5; bill more slender.
  c'. Crown of head with scattered hairs .... *G. indicus*, p. 322.
  d'. Crown of head quite naked .... *G. tenuirostris*, p. 323.

1192. **Gyps fulvus.** *The Griffon Vulture.*

Vultur fulvus, *Gm. Syst. Nat.* i, p. 249 (1788).
Gyps fulvus, *Blyth, Cat.* p. 32, partim; *id. Ibis*, 1866, p. 232; *Jerdon, B. I.* i, p. 8, pt.; *id. Ibis*, 1871, p. 235; *Sharpe, Cat. B. M.* i, p. 5; *Gurney, Ibis,* 1875, p. 88; *Blanf. East. Pers.* ii, p. 99; *Butler, S. F.* iii, p. 441; v, p. 217; *Ball, S. F.* vii, p. 196; *Hume, Cat.* no. 3; *St. John, Ibis*, 1889, p. 149.
Gyps fulvescens, *Hume, Ibis,* 1869, p. 356; *id. Rough Notes,* p. 19; *id. S. F.* i, p. 148; *id. N. & E.* p. 5; *id. S. F.* vii, p. 322; *id. Cat.* no. 3 bis; *Adam, S. F.* i, p. 367; *Scully, S. F.* viii, p. 218; *Butler, S. F.* ix, p. 369; *Barnes, ibid.* p. 450; *Davidson, S. F.* x, p. 285; *Swinhoe, Ibis*, 1882, p. 98; *Barnes, Birds Bom.* p. 4; *id. Jour. Bom. N. H. Soc.* iii, p. 207; *Oates in Hume's N. & E.* 2nd ed. iii, p. 203.

Coloration. Head thickly covered all round with short white hair-like feathers, passing into white down on the neck; feathers of ruff elongate, lanceolate, whitish, with rufous-brown or fawn-coloured edges, in very old birds dingy white throughout and disintegrated back and wing-coverts varying from brown with a pinkish tinge, through fawn-colour to pale brown, often particoloured, some feathers darker than others, but all with narrow pale shafts, more or less distinct; rump and upper tail-coverts paler fawn, especially along the shafts and edges; major coverts, scapulars, and tertiaries dark brown with pale edges; quills and tail black or blackish brown; lower parts throughout, including wing-lining, pinkish brown to ochreous buff, with narrow white shaft-stripes, the short crop-feathers generally rather browner.

Younger birds are deeper coloured when freshly moulted, and are distinguished by having the feathers of the back, scapulars, and coverts pointed and the ruff-feathers dark and elongate. The buff-coloured birds appear to be either young or old in worn and faded plumage.

Bill horny brown or dusky yellowish, paler on the culmen in adults, greenish horny in younger birds; cere black; iris brownish yellow; legs and feet dirty yellow to greenish grey; 3rd primary longest.

Length 41 to 47; tail 13; wing 26–29; tarsus 4·5; mid toe without claw 4·25; bill from gape to point 3·1.

Amongst the series of *G. fulvescens* in the Hume collection I can match all European specimens of *G. fulvus* available for comparison. It should be remembered that many specimens of Vulture skins in European museums are faded and bleached by exposure; but, so far as I can see, the Indian bird is absolutely identical with the European.

Distribution. Southern and South-western Europe, Northern Africa, and South-western Asia; common in Afghanistan, Baluchistan, the Punjab, Sind, and Rajputana, the range in India extending east as far as Nepal and Sikhim, and south to Khandesh and the Deccan. Ball records the species from Manbhoom, and I once saw a large Vulture, that must, I think, have been this species, on the banks of the Godávari near Dumagudem.

Habits, &c. The Griffon generally breeds on rocky cliffs in colonies, and lays a single white egg, about February, in a loosely constructed nest of sticks. Occasionally, but very rarely, the egg is slightly spotted; the average measurement is 3·65 by 2·7. Solitary nests on trees have been observed in North-western India; but in Sind I have no doubt these Vultures breed on the cliffs of the Khirthar and other ranges, for I saw a pair *in copulâ* on January 3rd on the crags, roaring in the most extraordinary way at the time, after the manner of Vultures.

1193. **Gyps himalayensis.** *The Himalayan Griffon.*

Gyps fulvus, *apud Blyth, Cat.* p. 32, partim; *id. J. A. S. B.* xxiv, p. 253, note; *Horsf. & M. Cat.* i, p. 3; *Jerdon, B. I.* i, p. 8, pt.; *nec* Vultur fulvus, *Gmel.*

Gyps himalayensis, *Hume, Rough Notes,* p. 12 (1869); *id. N. & E.* p. 3; *Jerdon, Ibis,* 1871, p. 235; *Sharpe, Cat. B. M.* i, p 8; *Brooks, S. F.* iii, p. 228; *Hume, S. F.* vii, p. 323; *id. Cat.* no. 3 ter; *Scully, S. F.* viii, p. 218; *Biddulph, Ibis,* 1881, p. 38 *Scully, ibid.* p. 416; *C. H. T. Marshall, Ibis,* 1884, p. 405; *Oates in Hume's N. & E.* 2nd ed. iii, p. 200.

Gyps nivicola, *Servertzov, Turkest. Jevotn.* p. 111, pl. vii (1873).

Coloration. Adult. Hair-like feathers on the head and down on neck white or yellowish white; feathers of ruff loose-textured, whitish along the shafts, pale brown on the sides; back and wing-coverts whity brown, rather unevenly coloured, with traces of pale shaft-stripes; lower back whitish or white; rump and upper tail-coverts buff; scapulars and greater wing-coverts dark brown with pale tips; quills and tail-feathers blackish brown, the inner quills with pale ends; crop brown, streaked paler; rest of lower parts light brown or buff with broad whitish shaft-stripes; under tail-coverts pale buff.

Young birds are dark brown above and below, with strongly marked whitish shaft-stripes on all body-feathers and wing-coverts, the shaft-stripes being very broad on the ruff and the lower parts; wing- and tail-feathers nearly black.

Bill pale horny green; cere pale brown; irides brownish yellow; legs and feet dingy greenish grey or white (*Hume*). The 4th primary is the longest.

Length about 48; tail 16; wing 30; tarsus 4·6; mid-toe without claw 4·3; bill from gape 3·3.

Distribution. Throughout the Himalayas from Cabul to Bhután, but only observed on the mountains. This species is also found farther north in Turkestan and Northern Tibet, and probably in other ranges of Central Asia.

Habits, &c. This is distinctly a mountain Vulture, and breeds from the end of December to the first week in March. It makes the usual platform of sticks, or sometimes occupies an old Eagle's nest, on the face of a cliff, and lays a single egg, sometimes greyish white, more often blotched and streaked with red-brown, and measuring about 3·76 by 2·75.

1194. **Gyps indicus.** *The Indian Long-billed Vulture*

Vultur indicus, *Scop. Del. Flor. et Faun. Insub.* ii, p. 85 (1786); *Sykes, P. Z. S.* 1832, p. 77.
Gyps bengalensis, *apud J. E. Gray in Hardw. Ill. Ind. Zool.* i, pl. 15; *nec Gm.*
Gyps indicus, *Blyth, Cat.* p. 33, partim; *Horsf. & M. Cat.* i, p. 4, pt.; *Jerdon, B. I.* i, p. 9, pt.; *id. Ibis,* 1871, p. 235; *Hume, Rough Notes,* p. 21; *id. N. & E.* p. 5; *id. Cat.* no. 4; *Adam, S. F.* i, p. 367; *Sharpe, Cat. B. M.* i, p. 10, pt.; *Davidson & Wend. S. F.* vii, p. 72; *Vidal, S. F.* ix, p. 29; *Davison, S. F.* x, p. 332.
Gyps pallescens, *Hume, S. F.* i, p. 150 (1873); vii, pp. 165, 325; *id. Cat.* no. 4 bis; *Sharpe, Cat. B. M.* i, p. 11; *Butler, S. F.* iii, p. 442; ix, p. 369; *Bingham, S. F.* viii, p. 190; *Davidson, S. F.* x, p. 285; *Swinhoe & Barnes, Ibis,* 1885, p. 54; *Barnes, Birds Bom.* p. 5; *id. Jour. Bom. N. H. Soc.* iii, p. 207; *Oates in Hume's N. & E.* 2nd ed. iii, p. 203.

Gidh, H.; *Gidad, Maha-dho,* Mahr.

Coloration. Adult. Short brownish-white hair-like feathers thinly sprinkled all round the head and on the nape; upper half of back and sides of neck, and all the front, with small tufts of white down scattered over them; ruff disintegrated, soft and white; back pale brown, upper wing-coverts still paler, all the feathers palest on their edges; lower back and rump brown, with broad white borders to the feathers, sometimes whitish throughout; upper tail-coverts darker brown, pale-edged; larger wing-coverts and scapulars the same; quills and tail-feathers blackish brown; crop generally uniform dark brown, but sometimes light brown or even white; lower parts whity brown, with indistinct broad pale shaft-stripes.

Young very like that of *G. himalayensis*; the head and nape more thickly clad than in the adult; a ruff of long lanceolate feathers, whitish, with brown edges at each side; upper back, smaller scapulars, and wing-coverts dark brown, with narrow whitish shaft-stripes; lower back and rump whitish; quills and tail nearly black; crop brown; abdomen and under wing-coverts light brown, with broad whitish shaft-stripes.

Bill and cere pale greenish, yellowish horny on culmen; irides brown; bare skin of head and face dusky ashy leaden; legs and feet the same; claws creamy horny (*Hume*).

Length about 38; tail 11; wing 23; tarsus 3·75; mid-toe without claw 3·9; bill from gape 2·8.

Distribution. Throughout the greater part of the Peninsula of India, south of the Indo-Gangetic plain—not in Sind nor in Ceylon.

Habits, &c. The Long-billed Vulture breeds from December to February in colonies on precipitous cliffs, laying a single egg, greenish white, generally unspotted, sometimes spotted or blotched with reddish brown, and measuring about 3·61 by 2·72.

1195. **Gyps tenuirostris.** *The Himalayan Long-billed Vulture.*

Vultur tenuiceps, *Hodgson in Gray's Zool. Misc.* p. 81 (1844), descr nulla.

Gyps tenuirostris, *Hodgson MS., Gray, Gen. B.* i, p. 6 (1844), descr nulla; *Hume, S. F.* vii, p. 326 (1878); *id. Cat.* no. 4 ter; *Scully, S. F.* viii, p. 219.

Gyps indicus, *apud Jerdon, B. I.* i, p. 9, partim; *Blyth, Ibis,* 1866, p. 232; *Sharpe, Cat. B. M.* i, p. 10, pt.; *Blyth & Walden, Birds Burm.* p. 64; *Hume & Dav. S. F.* vi, p. 1; *Hume, Cat.* no. 4; *id. S. F.* xi, p. 2; *Oates, B. B.* ii, p. 169; *id. in Hume's N. & E.* 2nd ed. iii, p. 202.

Ságún, Beng.; *Gut,* Lepcha.

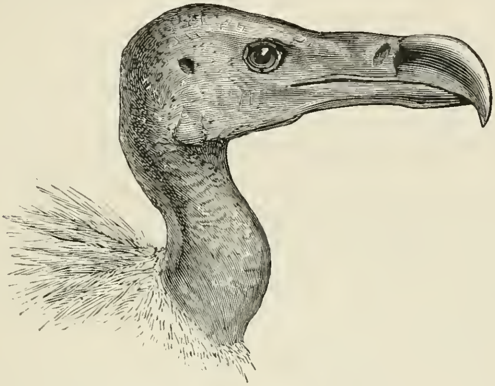

Fig. 83.—Head of *G. tenuirostris,* ⅓.

Very similar to the last, but distinguished by having no feathers at all on the head and scarcely any down on the neck, by the general coloration of the plumage being darker, the legs and feet somewhat longer, the bill more slender, the nostril apparently less elongate and broader, and the colours of the soft parts different.

Bill brownish dusky horny, the culmen yellowish horny; cere horny black; irides deep brown; skin of head and neck dark muddy; tarsi and toes black; claws dusky or horny black (*Hume*).

Length about 38·5; tail 10·5; wing 24; tarsus 4; middle toe without claw 4·3; bill from gape 2·85.

The Indian Peninsular form, and not the present species, must retain the name *indicus,* for Sonnerat in his original description of "Le Grand Vautour des Indes" (to which the specific name *indicus* was applied by Scopoli) wrote that the head is covered with fine down resembling hair (*la tête est couverte d'un petit duvet qui ressemble à du poil*). Hume has distinguished the Himalayan Vulture, *G. tenuirostris,* from that of Bengal, Assam, and Burma, on account of the slender bill and head of the former; but I feel doubtful whether the difference is constant.

Distribution. Throughout the lower Himalayas and near their base as far west as Kashmir, also in Bengal, Assam, and Burma, as far south as Moulmein; and according to Blyth in the Malay Peninsula also. The limits of this and the last species are not clearly known.

Habits, &c. This Vulture breeds on trees in Bengal in January and February, making the usual large nests of boughs freshly broken off. The single egg is nearly pure white, and measures about 3·5 by 2·73.

Genus **PSEUDOGYPS**, Sharpe, 1873.

This genus is only distinguished from *Gyps* by having 12 tail-feathers like other Vultures, instead of 14. There are two species very similar to each other, one is African, the other Indian.

1196. **Pseudogyps bengalensis.** *The Indian White-backed Vulture.*

Vultur bengalensis, *Gm. Syst. Nat.* i, p. 245 (1788).

Vultur leuconota, *J. E. Gray in Hardw. Ill. Ind. Zool.* i, pl. 14 (1830–32).

Gyps bengalensis, *Blyth, Cat.* p. 33; *Horsf. & M. Cat.* i, p. 4; *Jerdon, B. I.* i, p. 10; *Blyth, Ibis,* 1866, p. 233; *King, J. A. S. B.* xxxvii, pt. 2, p. 210; *Hume, Rough Notes,* p. 26; *Jerdon, Ibis,* 1871, p. 235; *A. Anderson, P. Z. S.* 1871, p. 676; 1875, p. 17; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Hume, N. & E.* p. 7; *Adam, S. F.* i, p. 367; *Blyth & Wald. Birds Burm.* p. 65; *Butler, S. F.* iii, p. 442; v, p. 322; vii, p. 179; *Blanford, S. F.* v, p. 245; *Davids. & Wend. S. F.* vii, p. 72; *Cripps, ibid.* p. 240; *Marshall, Ibis,* 1884, p. 406.

Pseudogyps bengalensis, *Sharpe, A. M. N. H.* (4) xi, p. 133; *id. Cat. B. M.* i, p. 11; *Hume & Dav. S. F.* vi, p. 1; *Ball, S. F.* vii, p. 196; *Hume, Cat.* no. 5; *Bingham, S. F.* viii, p. 190; *Scully, ibid.* p. 219; *Vidal, S. F.* ix, p. 29; *Reid, S. F.* x, p. 2; *Davidson, ibid.* p. 286; *Davison, ibid.* p. 332; *Hume, S. F.* xi, p. 1; *Oates, B. B.* ii, p. 170; *id. in Hume's N. & E.* 2nd ed. iii, p. 205; *Barnes, Birds Bom.* p. 6; *id. Jour. Bom. N. H. Soc.* i, p. 38; iii, p. 207; *St. John, Ibis,* 1889, p. 149.

Gidh, H. & Mahr.; *Ságún, Changoun*, Beng.; *Guligadu, Matú pudum gudu*, Tel.; *Walhorya*, Yerkli; *Karru*, Tam.; *Lin-tah*, Burmese.

Coloration. Adult. Head and fore-neck with sparse brownish hairs, thicker on the nape; back of neck with white downy tufts; ruff of short pure white down; wings, interscapulary region, upper tail-coverts, and tail black or brownish black; secondaries brownish grey; lower back, rump, upper part of flanks, lower wing-coverts except near the edge of the wing, axillaries, and thigh-coverts white; crop-patch black, bordered on each side by white down; breast and abdomen brownish black, with narrow whitish shaft-stripes.

Young. Head and neck much covered with down, whitish above, brownish and thinner below; ruff of whitish lanceolate feathers with brown edges; plumage generally dark brown, primaries and tail-feathers blackish; wing-coverts with narrow, breast and abdomen with broad whitish shaft-stripes; no white on back, flanks, or wing-lining; a white down border to the brown crop-patch.

Bill dark plumbeous, except the upper part of the upper mandible, which in adults is greyish white; cere horny black, polished; irides brown; naked skin of head and neck dusky plumbeous; legs and feet nearly black (*Hume*).

Length about 35; tail 10; wing 23; tarsus 3·75; mid-toe without claw 3·5; bill from gape to point 2·75.

At all ages this is a darker as well as a smaller bird than *Gyps indicus*, and may be at once recognized by its dark lower parts with narrow whitish shaft-stripes.

Distribution. The commonest Vulture throughout India and Burma, but not found in Ceylon nor above moderate elevations in the Himalayas. Rarer in the Punjab and Sind, and in the desert parts of Rajputana. According to St. John, large numbers accompanied the army engaged in S. Afghanistan in 1878–9, and fed on the dead camels.

Habits, &c. Very similar to those of other true Vultures. This bird and *Gyps indicus* are commonly found about towns and villages, and they assemble in large numbers to feed on carcases of all kinds. The nest is an irregular platform of sticks, always on a large tree, often banyan or pipal, sometimes on palms, not unfrequently tamarind, nim (*Melia azadirachta*), or *Terminalia*, and there are often several nests on one tree. The middle of the platform is lined with green leaves, and a single egg is laid, generally dull white, sometimes speckled or blotched with reddish brown, and measuring on an average 3·26 by 2·42. This bird breeds from October till March, the majority about December or January, rather earlier, as is usual, to the southward than in Northern India. When pairing these Vultures, like *Gyps fulvus*, make an extraordinary roaring.

Genus **NEOPHRON**, Savigny, 1810.

Bill slender, lengthened, the culmen straight at first, greatly hooked at the tip; cere very long; nostrils elongate, horizontal; crown and sides of head, chin, throat, and upper fore-neck naked; neck surrounded by a ruff of hackles, which extend up to the nape and round all the lower part of the neck; crop naked; wings long, pointed, the third quill longest; tail wedge-shaped. Third and fourth toes much united at the base by membrane; claws sharper than in other Vultures.

The habits and flight of these birds differ much from those of the preceding Vulturine genera. *Neophron* inhabits Africa, Southern Europe, and South-western Asia, including the Indian Peninsula. Two species are known, both Indian. The African *Vultur pileatus*, often referred to *Neophron*, belongs to a distinct genus, *Necrosyrtes*, Gloger.

Key to the Species.

a. Bill yellow in adults .... *N. ginginianus*, p. 326.
b. Bill dark horny at all ages .... *N. percnopterus*, p. 327.

1197. **Neophron ginginianus.** *The Smaller White Scavenger Vulture.*

Vultur ginginianus, *Lath. Ind. Orn.* p. 7 (1790).

Neophron percnopterus, *Blyth, Cat.* p. 33, pt.; *Horsf. & M. Cat.* i, p. 6, pt.; *Jerdon, B. I.* i, p. 12; *nec L.*

Neophron ginginianus, *Blyth, Ibis,* 1866, p. 233; *Hume, Rough Notes,* p. 31; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 12; xli, pt. 2, p. 230; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 165; *Hume, N. & E.* p. 9; *id. S. F.* i. p. 150; *id. Cat.* no. 6; *Sharpe, Cat. B. M.* i, p. 18; *Legge, S. F.* iii, p. 195; *id. Birds Ceyl.* p. 2; *Ball, S. F.* vii, p. 196; *Vidal, S. F.* ix, p. 29; *Butler, ibid.* p. 369; *Davison, S. F.* x, p. 333; *Barnes, Birds Bom.* p. 7; *Oates in Hume's N. & E.* 2nd ed. iii, p. 213.

Sufed Gidh, Kal Murgh, H.; *Tella borawa,* Tel.; *Manju Tiridi, Pittri Gedda, Pápá, Pápá parundu,* Tam.

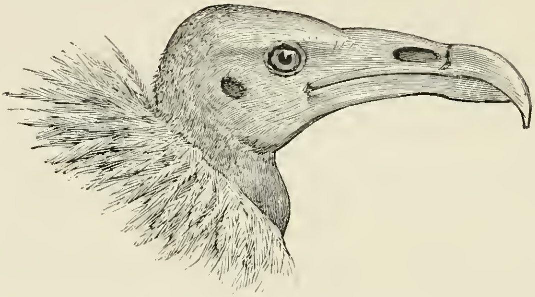

Fig. 84.—Head of *N. ginginianus*, ½.

Coloration. Adult. Plumage almost throughout white; winglet and primaries black, the latter grey outside, brown inside towards the base; secondaries whity brown or grey on the outer web outside, blackish brown elsewhere; tertiaries pale brown throughout. A brownish or greyish tinge on the scapulars and wing-coverts, and sometimes elsewhere, is a sign of immaturity. The neck-hackles are often stained rusty.

Young birds are at first blackish brown, the scattered down on the head and throat black, then pale tips appear on some of the neck-hackles and breast-feathers and on the smaller wing-coverts, giving a speckled appearance; the back, breast, and greater wing-coverts are mottled with whitish blotches. The change to the adult plumage is gradual.

Bill in adults horny yellow; cere and sides of head and throat yellow; irides dark brown; legs dirty yellow; claws pale horny. In young birds the bill is dark; naked parts of head and throat grey; legs and feet cinereous.

Length about 24; tail 9·5; wing 18·25; tarsus 3·1; mid-toe without claw 2·5; bill from gape to tip 2·4.

Distribution. India generally, from the Himalayas to Cape Comorin, only found as a straggler in Ceylon; wanting in Lower Bengal and to the eastward, replaced in the north-west by the next species; found in the Western Himalayas up to 7000 or 8000 feet.

Habits, &c. This bird, in India, haunts towns and villages, and lives largely on human excrement. It also eats carrion, but is not commonly seen feeding on dead animals. It breeds from February to May, making a nest on rocky or earthy cliffs, on buildings or on large trees, and lays usually two eggs, generally richly spotted and blotched with brownish red and measuring about 2·6 by 1·98. The nest is a loose pile of sticks, generally rudely lined with rags, sometimes with straw, cotton, or hair, or green leaves.

1198. **Neophron percnopterus.** *The Egyptian Vulture, or Large White Scavenger Vulture.*

Vultur percnopterus, *L. Syst. Nat.* i, p. 123 (1766).
Neophron percnopterus, *Blyth, Cat.* p. 33, partim; *Horsf. & M. Cat.* i, p. 6, pt.; *Sharpe, Cat. B. M.* i, p. 17; *Brooks, Ibis,* 1869, p. 43; 1870, p. 290; *Jerdon, Ibis,* 1871, p. 236; *Barnes, S. F.* ix, pp. 214, 450; *Biddulph, Ibis,* 1881, p. 38; *St. John, Ibis,* 1889, p. 150.

This is precisely similar to the last, except that it is rather larger, with much larger feet and toes, and it always has the bill dusky, never yellow; the cere is reddish yellow, darker than the cheeks, and the claws blackish horny.

Length about 26; tail 10; wing 19; tarsus 3·3; mid-toe without claw 2·6.

Distribution. This replaces the last species in the extreme North-west of India, and is the common bird of the Punjab, Sind, and Cutch, extending east to Delhi; farther east than this yellow-billed birds prevail. *N. percnopterus* ranges through Baluchistan, Afghanistan, and Persia to Egypt and Southern Europe, and has an extensive range in Africa. The occurrence of a single bird was observed by Biddulph at Gilgit. Of course, there is some passage between the two Neophrons, which are mere geographical races scarcely deserving specific distinction.

Family FALCONIDÆ.

The great majority of Raptorial birds belong to the present family, which comprises Eagles, Buzzards, Kites, Hawks, Harriers, Falcons, and a number of intermediate forms. They are distinguished from the Osprey by having the body-feathers provided with an aftershaft, and from the Vultures by having the head and neck feathered. In virtue of the last character *Gypaëtus* (the

Lämmergeyer), which is intermediate in characters between the Vultures and Eagles, is here assigned to the neighbourhood of the latter.

Throughout the family there are 12 tail-feathers and 14 cervical vertebræ. Nearly all are carnivorous, a few of the smaller species being insectivorous partly or wholly, and the majority capture living prey. The hair and feathers of the prey, if not removed before eating, are cast up, with the bones, in the form of pellets. As a rule, birds of this family are solitary, and all are monogamous.

Scarcely any two authors agree as to the division of the Falconidæ into subfamilies. Sharpe in the 'Catalogue' admits five: *Polyborinæ*, *Accipitrinæ*, *Buteoninæ*, *Aquilinæ*, and *Falconinæ*; but the result is unsatisfactory and artificial. Blyth and Gurney employed far more divisions; the former ('Ibis,' 1863) arranged these birds in 10 subfamilies, the latter in his last work ('A List of the Diurnal Birds of Prey') in no less than 11. If the Falconidæ are to be arranged in natural subfamilies at all, this number must, I believe, be increased rather than diminished; and as I can find no satisfactory system, I think it best to leave the family undivided with the exception of the Lämmergeyer, which appears entitled to rank as a subfamily apart.

a. Claws blunt; bill lengthened; a tuft of long bristles on the chin	*Gypaëtinæ*, p. 328.
b. Claws sharp; bill not lengthened; no bristles on chin	*Falconinæ*, p. 330.

Subfamily GYPAËTINÆ.

Genus **GYPAËTUS**, Storr, 1784.

Bill moderately high, compressed, much hooked at end, culmen curved throughout; nostrils oval, longitudinal, concealed by long bristles directed forwards from the lores and cere, another tuft of long bristles descending perpendicularly from the chin; tarsi feathered; feet stout; claws of moderate size, well curved, blunt; wings long, very pointed, 3rd quill longest; tail of 12 feathers, long, wedge-shaped, very pointed.

This genus inhabits mountainous regions in Southern Europe, Central Asia, and Africa. One species is found in the Himalayas, the Punjab, and Sind.

119. **Gypaëtus barbatus.** *The Bearded Vulture or Lämmergeyer.*

Vultur barbatus, *Linn. Syst. Nat.* i, p. 123 (1766).
Gypaëtus barbatus, *Storr, Alpenreise*, p. 69; *Hutton, J. A. S. B.* iii, p. 522; *Hodgson, J. A. S. B.* iv, p. 454; *Blyth, Cat.* p. 33; *Horsf. & M. Cat.* i, p. 9; *Jerdon, B. I.* i, p. 13; *id. Ibis*, 1871,

p. 236; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 12; *Hume, Rough Notes,* p. 35; *Delmé Radcliffe, Ibis,* 1871, p. 363; *Blanford, J. A. S. B.* xli, pt. 2, p. 41; *Hume & Henders. Lah. to Yark.* p. 170; *Hume, N. & E.* p. 12; *id. S. F.* i, p. 151; *id. Cat.* no. 7; *Sharpe, Cat. B. M.* i, p. 228; *Ball, S. F.* iii, p. 205; *Dresser, Ibis,* 1875, p. 99; *Scully, S. F.* viii, p. 221; *Barnes, S. F.* ix, pp. 214, 451; *Biddulph, Ibis,* 1881, p. 39; *Scully, ibid.* p. 416; *Barnes, Birds Bom.* p. 8; *St. John, Ibis,* 1889, p. 150; *Oates in Hume's N. & E.* 2nd ed. iii, p. 127; *Sharpe, Yarkand Miss., Aves,* p. 6.

Gypaëtus hemachalanus, *Hutton, J. A. S. B.* vii, p. 22 (1838).

Argul, H., Mussooree; *Okháb,* Chamba.

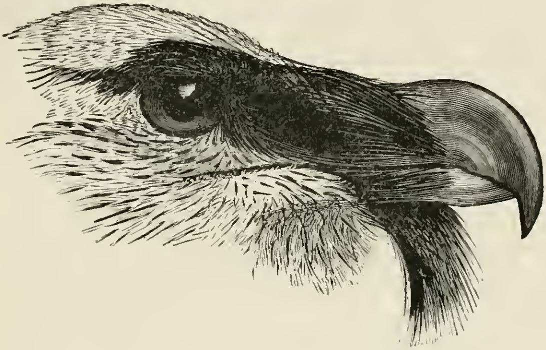

Fig. 85.—Head of *G. barbatus,* $\frac{1}{2}$.

Coloration. Adult. Bristles on lores, cere, and chin, supercilia more or less united across the occiput, and narrow stripe below ear-coverts black; remainder of head all round and throat white, speckled with black, more in younger, less in older birds; nape, neck all round, and lower parts white, tinged to a varying extent with ferruginous, and, except in very old birds, with an imperfect blackish-brown gorget, the feathers pale-shafted; upper back and smaller wing-coverts black with narrow white shaft-stripes, that are broader at the tip; rest of upper plumage deep silvery grey, the shafts white and the edges of the feathers blackish, the black edges disappearing in old birds on the quills and tail; some brown feathers on the lower back and rump; under wing-coverts blackish with white shaft-stripes, which are very broad on the axillaries.

The above is the fully adult plumage, but most birds have brown and whitish patches on the upper parts and blackish marks on the neck and breast. Young birds of the year have the head and neck black, the upper parts blackish brown, lower parts brownish grey; usually there is some white on the back and often on the base of the tail.

Bill horny, the tip darker; irides pale orange, the sclerotic membrane blood-red; feet plumbeous grey. Irides in the young pale yellowish brown.

Length about 4 feet; tail 22 inches; wing 32; tarsus 4; bill from gape to point 4 (all these are average measurements, and there is much variation).

Distribution. Mountainous parts of Southern Europe, Northern Africa, Western and Central Asia. This bird is common in Persia and Afghanistan, in the Khirthar range of Sind, the Suliman and Salt ranges of the Punjab, and throughout the Himalayas, as far east as Sikhim at all events, but not in forest.

Habits, &c. The Bearded Vulture keeps to rocky hills and mountains, and is usually seen beating regularly over precipices and slopes with a steady sailing flight very like that of a Vulture. It occasionally soars also, and may be recognized at a great elevation by its pointed wings and long wedge-shaped tail. The stories, chiefly Alpine, of its carrying off lambs (whence its name of "Lämmergeyer" or Lamb Vulture) and even children, and pushing goats and other animals over precipices, are now generally discredited. It is somewhat doubtful whether this great bird ever attacks living prey, its food consisting chiefly of bones and offal. It but rarely descends on a carcase; but Hume found one feeding on human ordure, like *Neophron*, to which it has a great resemblance in its gait when walking, and in its appearance on the wing. The Bearded Eagle has been known from antiquity for its habit of carrying up large bones and letting them fall from a height in order to break them, and it is said in the Levant to treat tortoises in the same manner; hence is supposed to have arisen the story of the death of Æschylus. This bird breeds on rocky precipices in the Himalayas and elsewhere from November to March, and lays generally two eggs, varying much in markings, but often richly coloured, and measuring about 3·24 by 2·66. The nest is a great pile of sticks, mixed with wool or hair or frequently old rags.

Subfamily FALCONINÆ.

As already pointed out, this subfamily contains the bulk of the Accipitrine birds. The following key to Indian Genera is not so satisfactory as could be wished, but many of the most important generic characters are not easily expressed in a few words.

Key to the Genera.

A. Bill without any pointed tooth on upper mandible opposite end of lower mandible; a festoon commonly present farther back.
  a. Lores with bristles or feathers terminating in bristles.
    a'. Tarsus feathered throughout: size mostly large. (*Eagles.*)
      a''. Claws much curved, hind claw longer than inner.

a^3. Primaries exceeding secondaries by more than length of tarsus.

a^4. No elongate occipital crest.

a^5. Culmen straight at base, then curving .... AQUILA, p. 332.

b^5. Culmen curving from cere *. . HIERAËTUS, p. 342.

b^4. An elongate occipital crest; abdomen chestnut in adults...... LOPHOTRIORCHIS, [p. 345.

b^3. Primaries exceeding secondaries by less than length of tarsus ...... SPIZAËTUS, p. 348.

b''. Claws but little curved, inner longer than hind claw .... ICTINAËTUS, p. 346.

b'. Tarsus not feathered throughout.

c''. Tarsus reticulated throughout, no scutellæ broader than high.

c^3. Tarsus long, more than 1½ times length of bill from gape to point.

c^4. Scales on tarsus subequal throughout: size of bird large. (*Serpent-Eagles.*)

c^5. Head not crested .... CIRCAËTUS, p. 355.

d^5. Feathers of nape and sides of neck lengthened to form a crest .... SPILORNIS, p. 357.

d^4. Scales in front of tarsus larger than behind: size small. (*Buzzard Eagles.*) .... BUTASTUR, p. 362.

d^3. Tarsus short, less than 1½ times length of bill from gape .... ELANUS, p. 379.

d''. Tarsus with some scutellæ broader than high.

e^3. Size large: tarsi very long and thick, scutellated in front and either reticulated behind or irregularly scutellated; scales beneath toes rough and pointed. (*Sea-Eagles.*)

e^4. Claws grooved beneath ...... HALIAËTUS, p. 366.

f^4. Claws rounded beneath ...... POLIOAËTUS, p. 369.

f^3. Size moderate: tarsus scutellated in front but not behind.

g^4. Tarsus short; bill from gape more than half tarsus. (*Kites.*)

e^5. Tail slightly rounded at the end .... HALIASTUR, p. 372.

f^5. Tail forked................ MILVUS, p. 374.

h^4. Tarsus long; bill from gape less than half tarsus. (*Harriers.*) CIRCUS, p. 380.

g^3. Size moderate or small: tarsus scutellated behind.

i^4. Bill from gape half length of tarsus or less. (*Hawks.*)

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* This distinction is very unsatisfactory. Generally *Hieraëtus* may be distinguished by having the middle toe longer than the bill from gape, whereas in *Aquila* the latter is the longer, but this does not hold good with *Aquila maculata* and *A. chrysaëtus.*

g^5. Bill from gape $\frac{2}{3}$ to $\frac{3}{4}$ length of mid-toe without claw.	
a^6. No crest	Astur, p. 396.
b^6. A small occipital crest	Lophospizias, p. 400.
h^5. Bill from gape about half mid-toe without claw	Accipiter, p. 402.
k^4. Bill from gape more than half tarsus. (*Buzzards.*)	
i^5. Lower part of tarsus naked all round	Buteo, p. 389.
k^5. Tarsus feathered in front to base of toes, naked and scutellate behind	Archibuteo, p. 395.
b. Lores very broad, densely feathered, without bristles *. (*Honey-Buzzards.*)	
c'. Loral feathers scale-like; bill not much compressed	Pernis, p. 405.
d'. Loral feathers not scale-like; bill excessively compressed, culmen sharp ..	Machærhamphus, [p. 408.
B. Bill with two teeth on each side of upper mandible, opposite end of lower	Baza, p. 408.
C. Bill with one tooth on each side of upper mandible.	
c. Tail half to two-thirds as long as wing.	
e'. Size moderate; wing never under 6. (*Falcons.*)	
e''. Tail rounded, not graduated.	
h^3. 2nd quill longest, 1st much longer than 4th.	
l^4. Sexes alike; foot long, mid-toe 1·25–2·25	Falco, p. 412.
m^4. Sexes dissimilar; foot small, mid-toe about 1	Erythropus, p. 424.
i^3. 2nd and 3rd quills subequal, also 1st and 4th	Æsalon, p. 426.
f''. Tail graduated, middle tail-feathers exceeding outer by an inch or more; upper parts largely brick-red: sexes dissimilar	Tinnunculus, p. 428.
f'. Size very small, wing under 5........	Microhierax, p. 432.
d. Tail nearly as long as wing: sexes dissimilar	Poliohierax, p. 434.

Genus **AQUILA**, Brisson, 1760.

The typical Eagles, constituting the present genus, are large and powerful birds, and, from their grand appearance, have acquired a reputation for courage which they scarcely deserve, as they are much less courageous than the comparatively small Hawks and Falcons.

The bill is strong and slightly lengthened, curved from the cere, the margin of the upper mandible straight or with a very slight festoon; wings long, the 4th or 5th quill longest; tail moderate, slightly rounded or nearly even; tarsus feathered to the toes; claws curved, strong and sharp, the hind toe and claw powerful.

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* This only applies to Indian species. In the African *Machærhamphus* (*M. anderssoni*) the feathers on the lores have some bristles intermixed.

The coloration is dark, and in adults as a rule nearly uniform throughout. Eagles prey on mammals, birds, and sometimes on reptiles, frogs, &c., and all or nearly all feed on carrion as well. The genus is found throughout Europe and Asia and North America, and seven species occur in India.

Key to the Species.

a. Nostril elliptical or ear-shaped, higher than broad.	
a′. Claws very large, hind claw 2·5–4 in. round curve	*A. chrysaëtus*, p. 333.
b′. Claws moderate, hind claw very rarely exceeding 2 in. round curve.	
a″. Wing in ♂ 21–23, in ♀ 23–24·5.	
a^3. Plumage deep blackish brown, crown and nape tawny	*A. heliaca* ad., p. 334.
b^3. Plumage deep umber-brown throughout, or a pale patch on the nape only	[p. 336. *A. bifasciata* ad.,
c^3. Lower plumage striated	*A. heliaca* juv., p. 334.
d^3. Lower plumage not striated, pale tips to larger wing-coverts and to secondaries	[p. 336. *A. bifasciata* juv.,
b″. Wing in ♂ under 21, in ♀ under 22	*A. vindhiana*, p. 337.
b. Nostril round, as broad as high.	
c′. Whole head and lower parts uniformly pale tawny or rufous	*A. fulvescens*, p. 339.
d′. Head and lower parts dark brown, or not uniformly coloured.	
c″. Wing ♂ 19–20, ♀ 20·5–21·5	*A. maculata*, p. 340.
d″. Wing ♂ about 18, ♀ 19	*A. hastata*, p. 341.

1200. **Aquila chrysaëtus.** *The Golden Eagle.*

Falco chrysaetus, *Linn. Syst. Nat.* i, p. 125 (1766).
Aquila chrysaetus, *Blyth, Cat.* p. 26; *Horsf. & M. Cat.* i, p. 47; *Jerdon, B. I.* i, p. 55; *id. Ibis*, 1871, p. 244; *Hume, Rough Notes*, p. 139; *id. S. F.* i, p. 157; *id. Cat.* no. 26; *Sharpe, Cat. B. M.* i, p. 235; *Unwin, P. Z. S.* 1874, p. 208; *Scully, S. F.* iv, p. 123; *Gurney, Ibis*, 1877, p. 210; *Biddulph, Ibis*, 1881, p. 41; *Scully, ibid.* p. 419; *C. H. T. Marshall, Ibis*, 1884, p. 406; *Barnes, Birds Bom.* p. 25; *Oates in Hume's N. & E.* 2nd ed. iii, p. 130; *Sharpe, Yarkand Miss., Aves*, p. 7.

Muriari, H., Chamba.

Coloration. Adult. Feathers of lores whitish, with black hair-like tips; crown and sides of head dark brown; feathers of nape, hind-neck, and sides of neck lanceolate, rufous tawny, dark brown at the base and black-shafted; rest of plumage blackish brown; the feathers of the upper parts white or mottled with white towards the base, the pale mottling being conspicuous on the inner secondaries and scapulars; tail with more or less distinct mottled bands of pale brownish grey except near the end; upper tail-coverts, bend of wing, thigh-coverts, and under tail-coverts generally rufous-brown.

Young birds are glossy brownish black; the crown and nape more tawny; the basal two-thirds of the tail greyish white, all body-feathers white at the base. The general tint varies from black to brownish black, blotched in places with brown and whity brown. There is, as usual in raptorial birds, a gradual change from the young or ring-tail plumage to that of the adult.

Bill dark horny; irides hazel-brown; cere and feet yellow.

Length of male about 35 inches; tail 13; wing 24·5. Length of a female about 40 inches; tail 14; wing 27·5; tarsus 4; bill from gape to point straight 2·75. The toes and claws are very large, the hind claw (not including the toe) measures from 2·5 to 3·5 round the curve.

Distribution. Throughout Europe, Northern Africa, Northern and Central Asia, and North America, chiefly about mountainous districts. This Eagle breeds in the higher Himalayas, and Mr. Hume thought he recognized it in the Sind hills and on the Makrán coast. Other reported Indian localities are probably due to error.

Habits, &c. The Golden Eagle, though by no means the largest, is one of the most powerful of predatory birds. It lives on gallinaceous birds and on mammals, such as hares, lambs, kids, fawns, &c., and it is said occasionally to attack even wolves, but it does not disdain carrion. It is kept tame in Central Asia, and employed to capture gazelles. It makes a large nest of dried sticks, lined with grass, moss, or other plants, sometimes on rocks, often on a tree, and lays usually two eggs, occasionally pure white, more often blotched with rufous-brown, measuring about 2·87 by 2·25.

1201. Aquila heliaca. *The Imperial Eagle.*

Aquila heliaca, *Sav. Descr. Egypte*, p. 259, pl. 12 (1810); *Sharpe, Cat. B. M.* i, p. 238; *Blanford, Ibis*, 1894, p. 283.

Falco imperialis, *Bechst. Orn. Taschenb. v. & f. Deutschl.* iii, p. 553 (1812).

Aquila imperialis, *J. E. Gray, in Hardw. Ill. Ind. Zool.* ii, pl. 28; *Blyth, Cat.* p. 26; *Horsf. & M. Cat.* i, p. 48; *Jerdon, B. I.* i, p. 57, partim; *id. Ibis*, 1871, p. 244; *Brooks, Ibis*, 1868, p. 349; *Hume, Rough Notes*, p. 142; *Anderson, P. Z. S.* 1871, p. 682; *Hume, S. F.* i, p. 157; *St. John, Ibis*, 1889, p. 152.

Aquila crassipes, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844), descr. nulla; *Brooks, P. A. S. B.* 1872, p. 64; *id. P. Z. S.* 1872, p. 503; *Anderson, ibid.* p. 620.

Aquila mogilnik *, *apud Blyth, J. A. S. B.* xv, p. 5; *Gurney, Ibis*,

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* I cannot identify the Imperial Eagle at any stage with S. G. Gmelin's figure and description of *Falco mogilnik* (see 'Ibis,' 1894, p. 283).

1873, p. 99; *Dresser, Birds Eur.* pl. 344; *Hume, N. & E.* p. 27; *Brooks, S. F.* i, p. 290; *Anderson, P. Z. S.* 1875, p. 20; *Gurney, Ibis,* 1877, p. 215; *Davison & Wend. S. F.* vii, p. 73; *Ball, ibid.* p. 197; *Cripps, ibid.* p. 244; *Hume, ibid.* p. 335; *id. Cat.* no. 27; *Butler, S. F.* ix, p. 372; *Reid, S. F.* x, p. 6; *Barnes, Birds Bom.* p. 26; *Littledale, Jour. Bom. N. H. Soc.* i, p. 194; *nec* Falco mogilnik, *Gmel.*

Aquila bifasciata, *Oates in Hume's N. & E.* 2nd ed. iii, p. 131; *nec Gray.*

Jumiz, Jumbiz, Barra Jumiz, Satangal, H.; *Frus,* Beng.

Coloration. Adult. Lanceolate feathers of head and neck above and at the sides tawny buff; forehead and sinciput blackish, or streaked with blackish, neck-feathers sometimes black-shafted; rest of plumage above and below glossy blackish brown; the smaller wing-coverts and upper and lower tail-coverts with buff margins; vent and lower tail-coverts whity brown; tail-feathers tipped buff, the last 2½ to 3 inches almost black, and the basal portion indistinctly marked with numerous irregular mottled brownish-grey transverse bands; in most adults also some scapulars are pure white, but the white feathers vary in number and position.

Many birds are particoloured, some of the feathers above and below having pale borders, or being wholly pale brown. These are probably immature birds.

The young have the feathers of the head, neck, back, wing-coverts, breast, and part of the abdomen dark brown with whitish shaft-stripes, very broad on the lower surface; upper and under tail-coverts, lower abdomen and thigh-coverts, chin, throat, and cheeks buff; secondary quills and major coverts and tail broadly tipped with fulvous white, remainder of tail uniform dull brown. This is the lineated stage. There is much variation in this plumage also.

Bill bluish horny; cere yellow with a greenish tinge; irides in adults brownish yellow, in the young dusky brown; feet yellow.

Length of male about 29; tail 11·5; wing 22; tarsus 3·6; bill from gape to point 2·4; of females—length about 31; tail 13; wing 24.

Distribution. From Central and South-eastern Europe to China, ranging north to Southern Siberia. The Imperial Eagle is chiefly a winter visitor to India, but breeds in the extreme North-west and perhaps occasionally in the North-west Provinces, or even, according to Jerdon, in the Deccan. Except locally it is a rare bird, being most common on the Indo-Gangetic plain. It has not been recorded in Ceylon or Burma, nor farther east in India than Furreedpore in Bengal.

Habits, &c. A sluggish heavy bird, often seen sitting on trees, sometimes on the ground in open country. It feeds much on carrion, though it also kills small mammals, birds, and lizards for food. It lays, as a rule, two eggs in the usual large nest of sticks lined with a few green leaves, and generally placed on a tree.

The eggs vary from unspotted greyish white to white greatly blotched with rufous, but are generally either white or but faintly coloured; they measure about 3 by 2·2, Indian examples about 2·7 by 2·09.

1202. **Aquila bifasciata.** *The Steppe Eagle.*

Aquila bifasciata[*], *J. E. Gray in Hardw. Ill. Ind. Zool.* i, pl. 17 (1830-32); *Blyth, J. A. S. B.* xv, p. 5; *Brooks, P. A. S. B.* 1872, p. 65; *id. P. Z. S.* 1872, p. 503; *id. J. A. S. B.* xlii, pt. 2, p. 145; xliii, pt. 2, p. 239; *id. S. F.* i, pp. 290, 325; *id. Ibis*, 1874, p. 86; *Anderson, P. Z. S.* 1872, p. 621; 1875, p. 21; 1876, p. 311; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Gurney, Ibis*, 1873, p. 99; *Dresser, P. Z. S.* 1873, p. 514; *Blyth, Birds Burm.* p. 63; *Oates, B. B.* ii, p. 185.

Aquila nipalensis, *Hodgson, As. Res.* xviii, pt. 2, p. 13, pl. 1 (1833); *Dresser, Birds of Europe*, v, p. 507, pl. 340; *Gurney, Ibis*, 1877, p. 222; *Hume, S. F.* vii, pp. 197, 338; x, p. 443; xi, p. 8; *id. Cat.* no. 27 bis; *Scully, S. F.* viii, p. 223; *Reid, S. F.* x, p. 7; *Oates, ibid.* p. 179; *Davison, ibid.* p. 287; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 556; vii, p. 374.

Aquila orientalis, *Cab. J. f. Orn.* 1854, p. 369.

Aquila imperialis, *Jerdon, B. I.* i, p. 57, partim; *Hume, Rough Notes*, p. 142, pt.; *nec Bechstein.*

Aquila amurensis, *Swinhoe, P. Z. S.* 1871, p. 338.

Aquila mogilnik, *Sharpe, Cat. B. M.* i, p. 240; *Hume, S. F.* iii, p. 25; *Hume & Dav. S. F.* vi, p. 11; *nec Gmel.*

Jumiz, H.; *Woon-lo*, Burmese; *Ong yau*, Lepcha.

Coloration. Adult. Almost uniform brown, varying from pale greyish brown to deep umber-brown; there is often a rufous-buff patch on the nape, varying much in size; quills and larger scapulars blackish brown; tail blackish brown, with traces of greyish cross-bars. This plumage is rare, most birds retaining some immature characteristics, such as buff upper tail-coverts or whitish mottling on the quills.

Young birds also vary in colour, but are paler than adults, some being almost whity brown, more often umber-brown; no nape-patch; broad white or buff or rufous-buff ends to the secondary quills and to the greater coverts, forming two conspicuous wing-bars; the primary-coverts and some of the under wing-coverts also with pale tips; all the quills are mottled with grey or whitish towards the base and the secondaries are more or less barred; upper and under tail-coverts buff; tail tipped whitish or buff, sometimes, except the pale tip, uniform brown, in other specimens mottled with grey, so as to be more or less distinctly banded. In some birds there are darker cross-bands and pale tips on the feathers of the back and on the wing-coverts, and sometimes the abdominal feathers have whitish transverse or arrow-head-shaped bands and pale tips.

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[*] This name has been rejected by several ornithologists because of *A. bifasciata*, Brehm (1831), a name given to the Spotted Eagle. It is, however, doubtful whether Brehm's name is older than Gray's.

Bill and claws black; gape, cere, and feet yellow; iris dark brown; eyelids greenish (*Oates*). The nostrils are rounder than in *A. heliaca*, but still oval.

Length of a male 30 inches; tail 11·5; wing 22; tarsus 4; mid-toe without claw 2·5; bill from gape 2·8. Females are rather larger: tail 12·5; wing 23·5.

Distribution. A winter visitor to Northern India, ranging south as far as Khandesh, Seoni, and Raipur; also found at the same season throughout Assam and Burma. Beyond Indian limits this Eagle is found in Eastern Europe, North-eastern Africa, and in parts of Central Asia, including Mongolia, Southern and Eastern Siberia, and China.

For a long time the two plumages of this Eagle were supposed to be phases of *A. heliaca* (*A. imperialis*), and were described as such by Jerdon and Hume. The recognition and separation of *A. bifasciata* is due to Messrs. Brooks and Anderson.

Habits, &c. Very similar to those of *A. heliaca*, except that the nest, which has not been observed within Indian limits, is generally placed on the ground.

1203. **Aquila vindhiana.** *The Indian Tawny Eagle.*

Aquila vindhiana, *Franklin, P. Z. S.* 1831, p. 114; *Jerdon, Madr. Jour. L. S.* x, p. 67; *Hume, N. & E.* p. 29; *Brooks, P. A. S. B.* 1873, p. 174; *Sharpe, Cat. B. M.* i, p. 243; *Anderson, P. Z. S.* 1875, p. 22; *Butler, S. F.* iii, p. 446; ix, p. 372; *Gurney, Ibis,* 1877, pp. 225, 234; *Davidson & Wend. S. F.* vii, p. 74; *Ball, ibid.* p. 197; *Hume, Cat.* no. 29; *Doig, S. F.* viii, p. 370; *Reid, S. F.* x, p. 7; *Davidson, ibid.* p. 287; *Barnes, Birds Bom.* p. 29; *id. Jour. Bom. N. H. Soc.* i, p. 40; *Oates in Hume's N. & E.* 2nd ed. iii, p. 132.

Aquilla punctata, *J. E. Gray in Hardw. Ill. Ind. Zool.* i, pl. 16 (1830–32).

Aquila fusca, *J. E. Gray, op. cit.* ii, pl. 27 (1833–34).

Aquila nævioides, *apud Blyth, Cat.* p. 27; *Horsf. & M. Cat.* i, p. 44; *nec Cuv.*

Aquila fulvescens, *apud Jerdon, B. I.* i, p. 60; *Blyth, Ibis,* 1866, p. 241; *Hume, Rough Notes,* p. 173; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 166; *Jerdon, Ibis,* 1871, p. 245; *Hume, S. F.* i, p. 158; *nec Gray.*

The Tawny Eagle, Jerdon; *Wokháb, Ragar,* H.; *Dholwa,* Wagri; *Bursawul,* Yerkli; *Alawa* or *Salwa,* Tel.; *Ali,* Tam.

Coloration very variable. Adults are almost uniform brown, varying from dark umber to pale brown, sometimes whity brown or whitish on the head and body. Very pale birds are generally in worn plumage, and the light tint is probably caused by bleaching. The quills are dark brown or nearly black at the end, mottled and barred towards the base; the tail is dark grey, with more or less distinct cross-bars. Occasionally the head is greyer or paler than the back, and in some birds (not, I think, fully adult) the head is almost black and the nape pale.

A nestling, obtained by Mr. Brooks from the nest, has the feathers brown, without shaft-stripes, but with broad rufous-buff edges, and pale tips to the quills and tail-feathers; but, according to Hume, in the nestling (N. & E. p. 30) "the whole plumage is rufous-brown, purer on the head, more earthy on the mantle, and paler below, each feather with a narrow black central stripe or line." Hume (Rough Notes, p. 176) says that the paler-coloured birds are young, and the plumage grows darker with age; but Brooks (P. A. S. B. 1873, p. 174) declares that the pale plumage is that of adult birds, and is due to fading from exposure. I am disposed to think Brooks right. Apparently there are two young plumages—one tawny, with dark shaft-stripes below and on the upper tail-coverts; the other darker brown, without shaft-stripes: but whether these plumages are successive or alternative it is difficult to say.

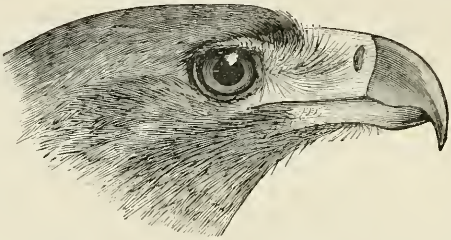

Fig. 86.—Head of *A. vindhiana*, $\frac{1}{2}$.

Many specimens have the breast dark brown, and the abdomen paler greyish brown with dark shaft-stripes. In the dark plumage many of the feathers have pale tips; in some cases, even in freshly-moulted adult birds, there are pale buffy terminal spots to the nape and breast-feathers (as in Gray's figure of *A. punctata*). In the nestling plumage the tail appears to be unbarred, but in the next plumage, probably after the first moult, it becomes closely barred, the barring becoming less marked again in the adult.

There are other variations still. Some birds have a brownish-rufous head, some a pale whitish one, some a black one with a whitish nape; some have particoloured feathers on the lower breast and abdomen. In this, as in other Eagles, the changes are probably irregular and vary in different individuals.

Cere deep yellow; irides hazel-brown; feet yellow (*Jerdon*). Bill pale bluish grey near the cere, tip black; cere dirty cream-colour; legs and feet dirty greenish white (*Hume*). Nostrils elliptical or ear-shaped; plumage harsh.

Length of male about 25·5; tail 10; wing 20; tarsus 2·75; mid-toe 2; bill from gape 2·25: in females—length 28; tail 11; wing 21·5.

Distribution. Throughout the greater part of India, chiefly in the drier districts, where this is by far the commonest Eagle; wanting on the Malabar coast and in Ceylon, and apparently in Lower Bengal and Assam, but occurring in Upper Burma near Thayet Myo, as there are specimens collected by Oates in the British Museum. This species is not known to occur outside of India and Upper Burma, but is represented by a nearly allied form, *A. albicans*, in N.E. Africa.

Habits, &c. This common Eagle is usually seen either seated on a tree or beating over fields and woods. It is, like most Eagles, not particular about its food, and will pounce on a small mammal, bird, lizard, snake, or frog, or share the carcase of a dead bullock with vultures; but it also subsists to a great extent by robbing smaller Accipitrine birds, such as kites and falcons, of their captures; and Elliot long since called attention to its troublesome habit of pursuing tame falcons, owing to its mistaking the jesses for prey. It breeds from November to June, chiefly in January in Northern India, rather earlier in the Central Provinces; it builds a nest of sticks, usually lined with green leaves, generally on the top of a high tree, but often, where no high trees are at hand, on a low bábul (*Acacia arabica*), and lays usually two eggs, greyish white, more or less spotted or blotched with yellowish brown, and measuring about 2·63 by 2·11.

1204. **Aquila fulvescens.** *Brooks's Eagle.*

Aquila fulvescens, *J. E. Gray in Hardw. Ill. Ind. Zool.* ii, pl. 29 (1833–34); *Brooks, P. A. S. B.* 1873, p. 173; *id. J. A. S. B.* xliii, pt. 2, p. 241; *id. Ibis,* 1874, p. 85; *Anderson, P. Z. S.* 1875, p. 22; *Gurney, Ibis,* 1877, p. 325; *Hume, S. F.* vii, p. 339; *id. Cat.* no. 28 bis; *Reid, S. F.* x, p. 450.

Aquila nævia, juv., *apud Brooks, Ibis,* 1868, p. 351; 1870, p. 290; *Hume, Rough Notes,* p. 168; *nec Gmel.*

Aquila nævioides, *Tristram, P. Z. S.* 1870, p. 4; *id. Ibis,* 1870, p. 290; *Jerdon, Ibis,* 1871, p. 245; *Anderson, P. Z. S.* 1871, p. 687.

Coloration. Head, neck, and lower plumage varying from yellowish buff to brownish rufous, the head-feathers, as a rule, and occasionally those of the lower parts with dark shafts; a narrow blackish supercilium; upper back and wing-coverts brown, the feathers broadly edged with buffy white; lower back buff; rump-feathers brown, with broad buff margins; upper tail-coverts buffy white; primary-quills and larger scapulars blackish brown, without buff edges, first primaries white at extreme base; secondaries dark brown, with whitish edges, especially on the outer webs; tail blackish brown, the feathers growing paler brown towards the end and with a whitish tip; in one specimen the tail shows traces of barring.

The pale buff plumage is evidently that of the young; what appears to be the adult has the head, neck, and lower parts brownish rufous; the feathers of the abdomen with darker centres, and the breast-feathers tipped darker; the upper back dark brown;

lower back paler and buffy; upper tail-coverts white. Only one specimen, now in the British Museum, is known in this stage, and it is uncertain whether the fully adult plumage has been observed.

Bill pale bluish grey, with dark tip; cere and gape cream-colour; iris light brown; feet yellowish (*Brooks*). Nostril round; plumage soft.

Length of female about 27·5; tail 11·5; wing 21; tarsus 4; bill from gape 2·3: of a male—tail 10·5; wing 19·25.

Distribution. This rare Eagle has only been obtained by Messrs. Brooks and Anderson, to whom we are indebted for all we know concerning it, in the North-west Provinces, chiefly about Etáwah. It is a cold-weather visitant, and is believed to have been also met with in Southern Russia and Eastern Prussia (*Gurney, l. c.*).

Habits, &c. Like the Spotted Eagles, this species is met with near rivers and marshes, and feeds, partly at all events, on frogs. Nidification unknown.

1205. **Aquila maculata.** *The Large Spotted Eagle.*

Falco maculatus, *Gmel. Syst. Nat.* i, p. 258 (1788).

Aquila clanga, *Pall. Zoogr. Rosso-Asiat.* i, p. 351 (1811); *Sharpe* (A. maculatæ *subsp.*), *Cat. B. M.* i, p. 248; *Gurney, Ibis,* 1877, p. 329; *Davids. & Wend. S. F.* vii, p. 74; *Ball, ibid.* p. 197; *Hume, Cat.* no. 28; *Bingham, S. F.* viii, p. 190; *Doig, ibid.* p. 370; *Butler, S. F.* ix, p. 372; *Reid, S. F.* x, p. 7; *Oates, B. B.* ii, p. 186; *id. in Hume's N. & E.* 2nd ed. iii, p. 138; *Barnes, Birds Bom.* p. 28; *id. Jour. Bom. N. H. Soc.* iii, p. 212; *Hume, S. F.* xi, p. 8.

Aquila vittata, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844), descr. nulla.

Aquila nævia, *Blyth, Cat.* p. 27; *Horsf. & M. Cat.* i, p. 45; *Jerdon, B. I.* i, p. 59; *Hume, Rough Notes,* p. 162; *id. S. F.* i, p. 158; *Jerdon, Ibis,* 1871, p. 244; *Anderson, P. Z. S.* 1871, pp. 686, 689; 1875, p. 22; *Blyth, Birds Burm.* p. 63; *Butler, S. F.* iii, p. 445; *Walden, Ibis,* 1876, p. 339.

Aquila maculata, *Brooks, S. F.* iv, p. 268; *Blanford, Ibis,* 1894, p. 287.

The Spotted Eagle, Jerdon; *Kaljanga,* H.; *Bukayari Jiyadha,* Beng.; *Nella gedha,* Tel.

Coloration. Adult. Dark, almost blackish brown, with a slight purplish gloss on the mantle; primary-quills black; tail unbarred, but washed with grey towards the end above; head and neck all round paler, the tips, and sometimes broad shaft-stripes to the lanceolate feathers of the crown and nape, lighter brown; feathers on tarsus and upper and lower tail-coverts mixed with whitish, and sometimes chiefly white; base of all feathers, including wing- and tail-feathers, white.

Young birds are also dark brown, and differ chiefly from adults in having the upper back and smaller wing-coverts marked with elongate paler greyish-brown spots, these spots are largest and whitish on the smaller scapulars and median coverts; longer scapulars, larger coverts, and secondaries with large buff tips;

lower back and rump pale brown, with dark edges to the feathers; upper tail-coverts whitish; tail black, grey, or mottled towards the end and pale-tipped; lower plumage with light brown shaft-stripes varying in breadth and tint; vent and lower tail-coverts buff. Some birds are pale brown beneath.

Bill bluish grey, dusky at tip; cere, gape, and feet orange-yellow. Irides brown (*Hume*). Nostrils round and large; plumage soft.

Length of a male about 26 inches; tail 10·5; wing 19·5; tarsus 4; bill from gape 2·5: of a female—length 27·5; tail 11·5; wing 20·5.

Distribution. Throughout the greater part of the Palæarctic region. Common throughout India and Northern Burma in damp tracts near water; not found in Ceylon, and rare in Tenasserim.

Habits, &c. A sluggish bird, living chiefly on frogs in India, but occasionally preying on small mammals, lizards, &c. It breeds on trees from April to June in Northern India, and as far south as the Tapti, and appears to lay a single greyish-white egg, profusely spotted and blotched with yellowish brown, and measuring about 2·65 by 1·98. Elsewhere two to three eggs are said to be laid.

1206. **Aquila hastata.** *The Small Indian Spotted Eagle.*

Morphnus hastatus, *Less. Voy. Bélanger*, p. 217 (1834).
Limnaëtus unicolor, *Blyth, J. A. S. B.* xii, p. 128 (1843).
Spizaëtus punctatus, *Jerdon, Madr. Jour. L. S.* xiii, p. 164 (1844).
Aquila hastata, *Blyth, J. A. S. B.* xv, p. 7; *id. Cat.* p. 27; *Jerdon, B. I.* i, p. 62; *Blyth, Ibis*, 1866, p. 241; *Hume, Rough Notes*, p. 180; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 265; *Jerdon, Ibis*, 1871, p. 245; *A. Anderson, P. Z. S.* 1872, pp. 69, 622; 1875, p. 23, pl. iii; *id. Ibis*, 1875, p. 199; *Brooks, S. F.* i, pp. 293, 327; *id. J. A. S. B.* xliii, pt. 2, p. 240; *Sharpe* (A. maculatæ *subsp.*), *Cat. B. M.* i, p. 248; *Ball, S. F.* ii, p. 378; vii, p. 198; *Gurney, Ibis*, 1877, p. 329; *Cripps, S. F.* vii, p. 244; *Hume, Cat.* no. 30; *Reid, S. F.* x, p. 450; *Oates, B. B.* ii, p. 188; *id. in Hume's N. & E.* 2nd ed. iii, p. 136; *Hume, S. F.* xi, p. 9; *Davidson, Jour. Bom. N. H. Soc.* iii, p. 213.
Spizaëtus hastatus, *Horsf. & M. Cat.* i, p. 34.
Aquila fusca, *Blyth, Birds Burm.* p. 63; *nec Gray.*

Jiyadar, Gutimar, Phari-tisa, H.

Coloration. Adult. Very dark brown, often with a purple gloss; lanceolate feathers of crown and nape often pale-tipped, but with dark rather than pale shaft-stripes; feathers of back, rump, wing-coverts, and breast also with rather darker shafts in general; primaries black; tail-feathers dark brown, often with traces of narrow bars.

Young birds have small buff or whitish spots on the nape, upper back, and smaller coverts, a few larger white spots on the median coverts, and there are narrow white tips to the larger coverts; the secondaries and tail-feathers are rather closely barred with grey; upper tail-coverts barred white and light brown; the breast and sometimes the abdomen, thigh-coverts, and lower wing-coverts have buff shaft-stripes; abdomen generally paler; lower tail-coverts buff; thigh-coverts, if not striped, whitish. The striation on the underparts is lost after the first moult, but the spots of the upper plumage do not entirely disappear till the bird is three or four years old.

Bill plumbeous blue at base, black at tip; cere, gape, and feet yellow; irides hazel-brown.

Length of male about 24; tail 9·5; wing 18; tarsus 3·8; bill from gape 2·3: the female very little larger.

Distribution. This species is only known to occur in India, where it is a permanent resident. It is common in parts of the Gangetic plain, but rare to the westward, unknown in Sind, more common in the Gangetic delta, and especially in Eastern Bengal. A specimen was obtained by Blyth from Arrakan; Jerdon states that he met with this species once or twice in Southern India; and it has been observed breeding in Raipur, Sambalpur, and Mysore.

Habits, &c. Very similar to those of *A. maculata.* The present species was observed by Mr. Frith in Mymensingh to plunder the nests of *Sturnopastor contra.* It breeds in April and May, and lays generally a single egg, sometimes two, in the usual stick-nest on a high tree. An egg measures 2·6 by 1·95.

Genus **HIERAËTUS**, Kaup, 1844.

With this genus commences the series of Hawk-Eagles as they have very appropriately been termed. They are birds of more slender build, with smaller bills, longer and more slender tarsi, and longer tail than the true Eagles, and most of them are, in some phase of plumage, partly or wholly white beneath.

This genus has a moderately strong bill, much hooked at the end, and with a prominent festoon to the upper mandible; the nostrils are elliptical and oblique; wing long, 4th quill longest, primaries exceeding secondaries by far more than the length of the tarsus; tail nearly square, more than half the length of the wing; tarsi feathered; toes long, outer toe (without claw) a little longer than inner; claws large, sharp, well curved; inner and hind claw both large, the latter the larger.

The type of *Nisaëtus*, Hodgs., the name used by Jerdon, Sharpe, and others for this genus, was *Spizaëtus nipalensis*, and the generic description does not apply to the present group, although Bonelli's Eagle was included by Hodgson (Ibis, 1894, p. 288). The type of *Hieraëtus* is *H. pennatus*, the Booted Eagle; but I follow Sharpe in placing the Booted and Bonelli's Eagles in the same genus. Four species are known, of which two are Palæarctic and Indian, one African, and one Australian.

Key to the Species.

a. Larger: wing 19–21 .... *H. fasciatus,* p. 343.
b. Smaller: wing 14–16·5 .... *H. pennatus,* p. 344.

1207. **Hieraëtus fasciatus.** *Bonelli's Eagle.*

Aquila fasciata, *Vieill. Mém. Soc. Linn. Paris*, ii, 1822, p. 152.
Falco bonelli, *Temm. Pl. Col.* i, pl. 288 (1824).
Aquila bonellii, *Layard, A. M. N. H.* (2) xii, p. 98; *Horsf. & M. Cat.* i, p. 46.
Nisaëtus grandis, *Hodgs. J. A. S. B.* v, p. 230 (1836); *Jerdon, Ill. Ind. Orn.* pl. 1, text.
Nisaëtus niveus, *apud Jerdon, Madr. Jour. L. S.* x, p. 69; *Elliot, ibid.* p. 234 (1839); *nec* Falco niveus, *Temm.*
Spizaëtus grandis, *Blyth, J. A. S. B.* xii, p. 301.
Eutolmaëtus bonellii, *Blyth, J. A. S. B.* xiv, p. 174; xix, p. 335; *id. Cat.* p. 26; *id. Ibis,* 1866, p. 241; *Hume, Rough Notes,* p. 189; *A. Anderson, P. Z. S.* 1872, pp. 75, 273.
Nisaëtus bonellii, *Jerdon, B. I.* i, p. 67; *Brooks, Ibis,* 1869, p. 44.
Nisaëtus fasciatus, *Sharpe, Cat. B. M.* i, p. 250; *Fairbank, S. F.* iv, p. 253; *Gurney, Ibis,* 1877, p. 419; *Davidson & Wend. S. F.* vii, p. 74; *Ball, ibid.* p. 198; *Hume, Cat.* no. 33; *Scully, S. F.* viii, p. 224; *Butler, S. F.* ix, p. 372; *Davidson, S. F.* x, p. 288; *Davison, ibid.* p. 336; *Barnes, Birds Bom.* p. 32; *id. Jour. Bom. N. H. Soc.* iii, p. 213; *Oates in Hume's N. & E.* 2nd ed. iii, p. 139.
Pseudaëtus bonellii, *Hume, S. F.* i, p. 158; iii, p. 446; *Adam, S. F.* ii, p. 338.

The Crestless Hawk-Eagle, Jerdon; *Morangi,* H.; *Kundeli Salawa,* Tel.; *Rajali,* Tam.

Coloration. Adult. Upper parts dark umber-brown, bases of feathers white; feathers of head and mantle inconspicuously dark-shafted; lores whitish, eyebrow streaked with white; sides of face white, the cheeks and ear-coverts streaked with brown; quills black, mottled with white on inner webs towards the base; upper tail-coverts with whitish margins; tail-feathers dark grey above, whitish below, with imperfect black cross-bands and a broad black terminal one, the inner webs mottled with white, the extreme tip whitish; lower parts white, with black shaft-stripes varying in breadth; wing-lining blackish brown, except near the edge of the wing all round, where the feathers are partly white; thigh-coverts and lower abdomen whity brown or pale brown, still with black streaks; under tail-coverts with pale rufous-brown cross-bars. Some old birds are buff or tawny beneath instead of white, and not unfrequently the thighs and abdomen are darker brown.

Young birds are paler above and have pale edges to the crown and nape-feathers, and the latter are sometimes rufous; the sides of the head and neck and the lower parts, including the wing-lining, light rufous or rufous-buff, with narrow dark stripes; the quills and tail banded almost throughout, the latter white at the base; no broad terminal band to the tail.

Bill bluish grey, black towards the tip; cere and gape dingy yellow; irides bright yellow or brownish yellow; feet pale dingy whitish brown with a yellow tinge (*Hume*).

Length of male 27; tail 10; wing 19; tarsus 3·7; bill from gape 2·15: of a female—length 29; tail 11; wing 20.

Distribution. Southern Europe, Northern Africa, and South-western Asia, ranging throughout the Indian Peninsula but not farther East. This bird has been only once obtained in Ceylon, but is not rare in the more hilly and jungly districts of Southern India. In the Punjab and N.W. Provinces, including the Himalayas, and in Sind it is generally distributed.

Habits, &c. This splendid Eagle lives on mammals and birds of its own killing, and is never known to touch carrion. Jerdon mentions that it is particularly destructive to pigeons. It is much seen on the wing sailing at a considerable height, at other times it perches on a high tree or rock. It breeds on cliffs and on trees, the former perhaps by preference, makes a large nest of sticks, and lays two eggs on a lining of green leaves. The eggs are greenish white, unspotted or faintly blotched and streaked with brown; they measure about 2·78 by 2·1, and are usually laid in the latter half of December, in January or in February.

1208. **Hieraëtus pennatus.** *The Booted Eagle.*

Falco pennatus, *Gmel. Syst. Nat.* i, p. 272 (1788).

Spizaëtus milvoides, *Jerdon, Madr. Jour. L. S.* x, p. 75 (1839).

Hieraëtus pennatus, *Blyth, Cat.* p. 28; *id. Ibis,* 1866, p. 241; *Hume, Rough Notes,* p. 182; *Hume & Dav. S. F.* vi, p. 11; *Davidson & Wend. S. F.* vii, p. 74; *Hume, ibid.* p. 198; *id. Cat.* no. 31; *id. S. F.* x, p. 335; xi, p. 9; *Vidal, S. F.* ix, p. 30; *Butler, S. F.* ix, p. 372; *Swinhoe, Ibis,* 1882, p. 99; *Davidson, S. F.* x, p. 287; *Reid, ibid.* p. 450; *Barnes, Birds Bom.* p. 30.

Aquila pennata, *Layard, A. M. N. H.* (2) xii, p. 98; *Horsf. & M. Cat.* i, p. 43; *Jerdon, B. I.* i, p. 63; *id. Ibis,* 1871, p. 246; *A. Anderson, P. Z. S.* 1872, p. 74; 1875, p. 24; *Hume, S. F.* iii, p. 387; *Butler, S. F.* vii, p. 174; *St. John, Ibis,* 1889, p. 152.

Nisaëtus pennatus, *Sharpe, Cat. B. M.* i, p. 253; *Hume, S. F.* iii, p. 25; *Gurney, Ibis,* 1877, p. 419; *Legge, Birds Ceyl.* p. 40; *Biddulph, Ibis,* 1881, p. 41; *Scully, ibid.* p. 420; *Oates, B. B.* ii, p. 189; *id. in Hume's N. & E.* 2nd ed. iii, p. 144.

The Dwarf Eagle, Jerdon; *Baghati Jumiz, Gilheri Mar,* H.; *Udatal Gedda,* T.; *Punja prandu,* Tam.; *Rajaluja,* Cing.

Coloration. Adult. Forehead and lores whitish; a narrow black superciliary streak; head and neck above and on sides fawn-colour or tawny, feathers with black shaft-stripes that are broader on the nape and broader still on the crown; cheeks and ear-coverts darker; upper parts brown; upper back, larger scapulars, and rump dark umber-brown; tertiaries, smaller scapulars, and wing-coverts brown, with broad whity-brown edges and darker shafts; larger coverts darker but pale-edged; quills blackish, secondaries with pale ends; upper tail-coverts fawn or rufous-brown; tail-feathers greyish brown above, greyish white beneath, with traces of dark bars, the last one much broader, and pale tips; lower parts, including wing-lining, buffy white, with black longitudinal streaks often fringed with ferruginous, these are thickly marked on the chin, more thinly on the throat and breast, generally disappearing on the abdomen, and replaced by faint rufous bars on the thigh-coverts and vent in very old birds; a few black spots beneath the wings.

Some birds are dark brown throughout, and although these may be young in general, the dark plumage appears in some cases to be retained for a long time, as individuals certainly breed in it.

Young birds usually have the head and neck rufous-brown or dull rufous, sometimes dark brown; the upper plumage brown as in adults, but with dark shaft-stripes; tail-coverts whitish; lower parts either dark brown or pale rufous with blackish streaks, except on the lower abdomen; tail greyish brown above, paler below, more or less distinctly banded and pale-tipped.

Bill pale blue at base, blackish at tip; irides pale brown; cere, gape, and feet yellow (*Hume*). Blyth says that Indian birds have sometimes a rudimentary crest.

Length of male about 29; tail 8·5; wing 15; tarsus 2·4; bill from gape 1·4: of a female—length 21·5; tail 9; wing 15·75.

Distribution. Southern Europe, great part of Africa, Western and Central Asia, and throughout India, Ceylon, and Burma, though rare in the two latter.

Habits, &c. This is a highly predatory species, living on squirrels, rats, and other small mammals, doves, pigeons, &c. It frequently carries away fowls, and Jerdon remarks that Kites are often unjustly credited with the depredations of this little Eagle on pigeons and poultry. It frequents both woods and cultivated ground, and is often found about towns and villages. As a rule the Booted Eagle is a winter visitor to India, and breeds farther north; but a nest was taken on a banyan tree by Mr. Theobald, in 1869, near Salem. The nest in Europe is, as usual, of sticks, with a lining of green leaves under the eggs, which are two in number, greenish white, with in general but few coloured markings.

Genus **LOPHOTRIORCHIS**, Sharpe, 1874.

This genus, although resembling *Spizaëtus* in the plumage of the young and in the crest, is distinguished by its longer wings, with the primaries projecting beyond the secondaries by more than the length of the tarsus, by its shorter tail, and its much longer toes and more powerful claws, the claw of the third toe being longer than the culmen beyond the cere. The adult coloration too is peculiar, black above, and the abdomen chestnut.

The typical species is Indian; another species referred to the genus is American. No others are known.

1209. **Lophotriorchis kieneri.** *The Rufous-bellied Hawk-Eagle.*

Astur kieneri, *Sparre, Mag. Zool.* 1835, *Aves*, pl. 35.
Spizaëtus albogularis, *Tickell, Blyth, J. A. S. B.* xi, p. 456 (1842).
Spizaëtus kieneri, *Blyth, Cat.* p. 26; *Horsf. & M. Cat.* i, p. 34; *Hume, Rough Notes*, p. 216; *id. S. F.* i, p. 311; *Hume & Inglis, S. F.* v, p. 9; *Blanf. ibid.* p. 483; *Hartert, J. f. Orn.* 1889, p. 374.

Limnaëtus kienerii, *Jerdon, B. I.* i, p. 74; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 152; *Legge, S. F.* iii, p. 198; *Gurney, Ibis,* 1877, p. 432; *Barnes, Birds Bom.* p. 35.
Lophotriorchis kieneri, *Sharpe, Cat. B. M.* i, pp. 255, 458; *Hume & Bourdillon, S. F.* vii, p. 33; *Ball, ibid.* p. 198; *Hume, Cat.* no. 37; *Legge, Birds Ceyl.* p. 42; *Hume, S. F.* ix, p. 273; xi, p. 10; *Bligh, Ibis,* 1886, p. 299.

Coloration. Adult. Upper parts and sides of head and neck black and glossy; quills dark brown; tail-feathers brownish, barred darker; the quills and tail-feathers are light ashy grey beneath with dark bars except at the ends of the quills, the tail has a broad subterminal black band; chin, throat, and breast white, with a few lanceolate black shaft-stripes on the breast, the white passes into the ferruginous chestnut with black shaft-lines of the abdomen, lower tail-coverts, thigh-coverts, and wing-lining. Sometimes the chin, throat, and breast are tinged with ferruginous red.

Young birds are brown above, some of the feathers darker than others, and many of them with pale edges; pure white below; the tail barred throughout. This plumage has apparently not been observed in Himalayan birds; but I described one obtained by Mr. Mandelli some years since, with the upper parts brownish and the lower buff, a little ferruginous only on the thigh-coverts and lower tail-coverts. In young birds the ear-coverts are rufous-brown with black streaks.

Bill black, plumbeous at base; cere and feet yellow; irides dark brown (*Legge*). The crest is about 2·5 long, not pointed.

Length of male about 21; tail 8·25; wing 14; tarsus 2·8; bill from gape 1·4: length of female about 24; tail 9·5; wing 16; tarsus 3; bill from gape 1·5. Himalayan birds appear larger than Malayan.

Distribution. A rare bird. The recorded localities are Eastern Himalayas, Assam ranges, Cachar, Manipur, Singhbhoom, Travancore, Ceylon, Malay Peninsula, and some of the Malay Islands. No specimen is known to have been obtained as yet in Burma.

Habits, &c. According to the very few recorded observations, especially those of Hume and Hartert, this is a bold courageous bird, with a flight and mode of attack somewhat resembling a falcon's, and much exceeding in power and dash the movements of the *Spizaëti.* It lives in forests. Nidification unknown.

Genus **ICTINAËTUS**, Jerdon (1843).

Bill rather small, the edge of the upper mandible almost or quite straight; nostrils oval, nearly round, oblique; wing long, 5th quill longest, the feathers broad; tail long, slightly rounded; tarsus feathered. The foot is very remarkable: the toes are short, the inner toe thicker than the middle toe and nearly as long; outer toe very short; all the claws much less curved than in other Eagles, and the inner claw longest, longer even than the hind claw. Plumage in adults black throughout.

The generic name *Neopus*, used generally for this Eagle, was published in 1844 (Gray's Zool. Misc. p. 81), whilst Jerdon's name *Ictinaëtus* dates from a year earlier, having been published by Blyth (J. A. S. B. xii, p. 128) in a note to the paper in which Hodgson gave the name *Heteropus*, which had to be discarded on account of previous use (Ibis, 1894, p. 289).

A single species.

1210. **Ictinaëtus malayensis.** *The Black Eagle.*

Falco malayensis, *Reinw.*, *Temm. Pl. Col.* pl. 117 (1824).
Aquila pernigra, *Hodgs. J. A. S. B.* v, p. 227 (1836).
Heteropus perniger, *Hodgs. J. A. S. B.* xii, p. 127.
Ictinaëtus ovivorus, *Jerdon*, *Blyth*, *J. A. S. B.* xii, p. 128 (1843).
Nisaëtus ovivorus, *Jerdon*, *Madr. Jour. L. S.* xiii, p. 157 (1844).
Ictinaëtus malaiensis, *Blyth*, *J. A. S. B.* xv, p. 7; *id. Cat.* p. 28; *Irby*, *Ibis*, 1861, p. 221.
Neopus malayensis, *Horsf. & M. Cat.* i, p. 381; *Jerdon*, *B. I.* i, p. 65; *Beavan*, *P. Z. S.* 1868, p. 396, pl. 34; *Hume*, *Rough Notes*, p. 187; *Sharpe*, *Cat. B. M.* i, p. 257; *Fairbank*, *S. F.* iv, p. 253; *Hume & Bourd. ibid.* p. 355; *Gurney*, *Ibis*, 1877, p. 423; *Hume & Dav. S. F.* vi, p. 11; *Ball*, *S. F.* vii, p. 198; *Legge*, *Birds Ceyl.* p. 47; *Hume*, *Cat.* no. 32; *Butler*, *S. F.* ix, p. 372; *Davison*, *S. F.* x, p. 335; *Oates*, *B. B.* ii, p. 190; *id. in Hume's N. & E.* 2nd ed. iii, p. 145; *Hume*, *S. F.* xi, p. 9; *Barnes*, *Birds Bom.* p. 31.
Neopus malaccensis, *C. H. T. Marshall*, *Ibis*, 1884, p. 407.

Laknongbong, Lepcha; *Hügong*, Bhotia; *Adavi nalla gedda*, Tel.

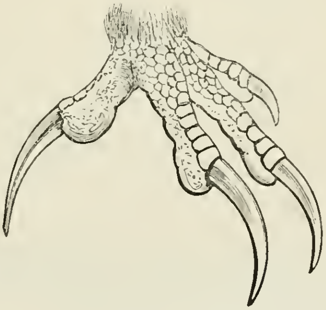

Fig. 87.—Left foot of *I. malayensis*, ½.

Coloration. *Adult.* Brownish black or black almost throughout; lores whitish; tail-feathers, except near the tips, and inner webs of quills towards the base, with mottled bars of grey above and of white below; lower parts sometimes browner.

Young birds are browner, and some have the head more or less buff or pale tawny, especially on the sides; the feathers of the crown, hind-neck, and sides of neck, in some, with tawny terminal spots; and the feathers of the lower parts with long drops or broad median stripes of pale ochreous brown; in one specimen they are ochreous with black shaft-stripes and edges. These specimens, however, appear strangely rare: out of 20 Himalayan specimens in the British Museum only one has a spotted head and none are striated beneath, though one from the Nilgiris shows both markings. Probably the young are often similar to adults, or else the immature plumage is quickly lost.

Bill greenish horny, black at the tip; cere, gape, and feet deep yellow; irides dark brown (*Jerdon*).

Length of a male 27; tail 13; wing 21·5: of a female—length 31; tail 14; wing 24; tarsus 3·5; bill from gape 2.

Distribution. Throughout the Himalayas as far west as Chamba, and along the Western Gháts as far as Cape Comorin; also in Ceylon; very rare in the peninsula away from the Sahyádri, though Jerdon says he saw this species in the Eastern Gháts and in Central India (? Bastar), and Ball thought he saw it in Chutia Nagpur. It is found in the ranges south of Assam, and is very rare in Burma, but is not met with in the Malay Peninsula and islands.

Habits, &c. The Black Eagle is usually seen on the wing, soaring over forests with a steady graceful flight, which both Jerdon and Hume compare to that of a Harrier. It lives largely on the young and eggs of birds, and was observed by Mr. Bourdillon to carry off nests and examine their contents. It also occasionally feeds on reptiles. The eggs were obtained by Hume from Kúlú and Bashahr, and were said to have been taken early in January from nests on cliffs. They were greyish white, more or less speckled or blotched, and measured about 2·6 by 1·95. Three eggs were obtained in one nest.

Genus **SPIZAËTUS**, Vieillot, 1816.

Bill short, high at the base; culmen compressed, much curved, a prominent festoon to the margin of the upper mandible; nostril rounded; wings short and rounded, 5th quill longest, the primaries exceeding the secondaries by less than the length of the tarsus in the closed wing. Tail rather long, nearly square. Tarsus long, slender, feathered throughout; toes large but not long, unequal, outer toe without claw longer than inner toe similarly measured; claws strong, unequal, well curved, hind claw largest. A crest generally present.

This is a forest genus found in America and Africa as well as throughout the Oriental region. The Oriental forms are distinguished by some writers as *Limnaëtus*, but they only differ from the African and American species in having slightly longer wings. Several Indian kinds have been described, of which I distinguish five.

Key to the Species.

a. Feathering of tarsus does not extend to division of toes.
  a'. A distinct crest, 4–6 long, always present... *S. cirrhatus*, p. 349.
  b'. No crest, or a rudimentary one .... *S. limnaëtus*, p. 351.

b. Feathers extend on to basal portion of middle toe.
  c'. Large: wing 17–18·5.
    a''. White bands on abdominal feathers interrupted at shafts .... *S. nepalensis*, p. 352.
    b''. White bands go completely across abdominal feathers .... *S. kelaarti*, p. 354.
  d'. Small: wing about 9·5.................. *S. albiniger*, p. 354.

1211. **Spizaëtus cirrhatus.** *The Crested Hawk-Eagle.*

Falco cirrhatus, *Gmel. Syst. Nat.* i, p. 274 (1788).
Falco ceylanensis, *Gmel. t. c.* p. 275 (1788).
Falco cristatellus, *Temm. Pl. Col.* pl. 282 (1824).
Nisaetus cristatellus, *Elliot, Madr. Jour. L. S.* x, p. 234; *Jerdon, Ill. Ind. Orn.* text to pl. 1, p. 7.
Spizaëtus cristatellus, *Blyth, J. A. S. B.* xii, p. 306; *Horsf. & M. Cat.* i, p. 33.
Nisaëtus cirratus, *Blyth, J. A. S. B.* xiv, p. 174.
Spizaëtus limnaëtus, var., *Blyth, Cat.* p. 24.
Limnaëtus cristatellus, *Jerdon, B. I.* i, p. 71.
Spizaëtus cirrhatus, *Blyth, Ibis,* 1866, p. 242; *Hume, Rough Notes,* p. 206; *id. S. F.* iii, p. 446; *Sharpe, Cat. B. M.* i, p. 269; *Fairbank, S. F.* iv, p. 253; *Hume & Bourd. ibid.* p. 356; *Oates in Hume's N. & E.* 2nd ed. iii, p. 147.
Spizaëtus sphynx, *Hume, S. F.* i, p. 321.
Limnaëtus cirrhatus, *Gurney, Ibis,* 1877, p. 429; *Ball, S. F.* vii, p. 198; *Hume, Cat.* no. 35; *Vidal, S. F.* ix, p. 30; *Butler, ibid.* p. 373; *Davidson, S. F.* x, p. 288; *Hume, ibid.* p. 336; *Barnes, Birds Bom.* p. 33; *id. Jour. Bom. N. H. Soc.* iii. p. 214.
Limnaëtus ceylonensis, *Gurney, Ibis,* 1877, p. 430; 1878, p. 85; *Hume, S. F.* vii, p. 511; *id. Cat.* no. 35 bis.
Spizaëtus ceylonensis, *Legge, Birds Ceyl.* p. 55, pl. ii; *Parker, S. F.* ix, p. 476.
Limnaëtus sphynx, *Hume, Cat.* no. 34 quat.

Shah Baz, H.; *Jutu Bhyri,* Tel.; *Rajaliya,* Cing.

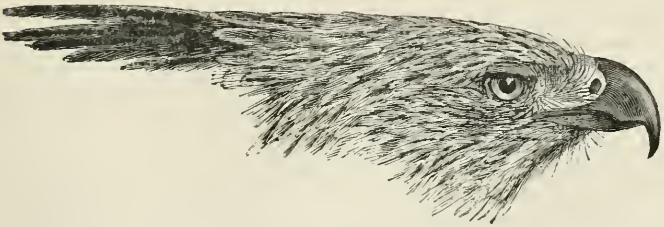

Fig. 88.—Head of *S. cirrhatus*, $\frac{2}{5}$.

Coloration. Adult. Feathers of head and neck above and at the sides blackish brown, with pale or rufous edges; occipital crest 4 to 6 inches long, black, and, except in very old birds, tipped white; upper parts generally umber-brown, not uniform, some feathers having darker centres or shafts and paler border; quills brown above, light grey or white below, with blackish bars and tips, inner webs white towards the base; tail brown above, light grey beneath, usually with 5 blackish cross-bars, more rarely 4, the first concealed by the coverts, the last broadest, followed by a whitish tip; pale interspaces as a rule broader than dark bars, and last pale interspace much broader than the others; chin and throat white, streaked with black, the black streaks generally forming three longitudinal stripes, one median and two lateral; breast white with large spots, elongate, black, and generally fringed with rufous; abdomen and lower tail-coverts umber-brown, thighs generally more rufous, and tarsus whitish, the feathers dark-shafted as a rule throughout, especially on the legs; smaller under wing-coverts dull rufous, brown-shafted; greater lower wing-coverts white with brown cross-bands; axillaries greyish brown with dark shafts.

Young birds have the head and neck rufous-buff to buffy white, generally but not always with dark centres or shaft-stripes to the feathers, which in some very young birds have white tips; feathers of upper plumage brown, generally pale-edged; quills and tail with more dark bands than in adults, there being 7 on the tail including the subterminal one; lower parts white or buff or pale rufous, generally with a few rufous-brown spots, darker at the shafts; as a rule the flanks, lower abdomen, thigh-coverts, lower tail-coverts, and tarsal feathers are banded with pale rufous and white; traces of this banding are often found in older birds.

Bill dark plumbeous, black at the tip; cere dark leaden in adult, yellow in young birds; irides leaden grey, pale straw-colour, or golden yellow; feet yellow. The feathers of the tarsus do not extend quite to the base of the toes.

Length of a male about 26 inches; tail 11; wing 16: of a female—length 29; tail 12; wing 17; tarsus 4; bill from gape 1·8. Ceylonese and some South Indian birds are considerably smaller and measure: tail 9 to 10·5, wing 13·5 to 15·2. They have been distinguished as *Spizaëtus ceylonensis*, and form a well-marked race, but differing only, like so many animals from the extreme south of India and Ceylon, in size, and therefore I think not to be separated as a distinct species. *S. sphynx* of Hume, from Travancore, is an old bird of this Southern variety with, as often happens in old birds, no white on the crest.

Distribution. The Peninsula of India and Ceylon in well-wooded tracts. Only an occasional straggler is found on the great Indo-Gangetic plain of Northern India, as in the case of a specimen obtained by Hume at Etáwah; as a rule the northern limit of this bird from Mount Abu to Midnapore in Bengal is the edge of the hilly country.

Habits, &c. Very similar to those of other Indian *Spizaëti*. This is a forest bird, usually seen on trees, often, as Jerdon says, "on the top of a high tree, where it watches for hares, partridges, young pea-fowl, jungle-fowl, &c., on which it pounces." It also feeds on squirrels, lizards, &c. It but rarely soars, and is more often seen flying through the trees than hovering above them. It has a peculiar prolonged note, like other species of the genus. The habits of the Ceylon race in captivity have been well described by Legge. The nest, placed on a high tree, is a huge structure of sticks, and is lined with green leaves, on which a single egg is laid at some time from December to April. The egg is dull greenish white, unspotted, or faintly streaked at the larger end with reddish brown, and measures on an average 2·67 by 2·03.

1212. **Spizaëtus limnaëtus.** *The Changeable Hawk-Eagle.*

Falco limnæëtus, *Horsfield, Tr. Linn. Soc.* xiii, p. 138 (1821); *Temm. Pl. Col.* pl. 134.
Falco caligatus, *Raffles, Tr. Linn. Soc.* xiii, p. 278 (1822).
Falco niveus, *Temm. Pl. Col.* pl. 127 (1823).
Limnaëtus horsfieldi, *Vigors, Mem. Raffl.* p. 649 (1830); *Gurney, Ibis*, 1877, p. 428; *Hume, S. F.* vi, p. 11, note; *id. Cat.* no. 34 A; *Cripps, S. F.* vii, p. 246.
Nisaëtus pallidus, *Hodgs. J. A. S. B.* vi, p. 361 (1837), descr. nulla.
Spizaëtus limnaëtus, *Blyth, Cat.* p. 24; *Horsf. & M. Cat.* i, p. 32; *Sharpe, Cat. B. M.* i, p. 272; *Blyth, & Wald. Birds Burm.* p. 63; *Hume & Dav. S. F.* vi, p. 11; *Oates, B. B.* ii, p. 192; *id. in Hume's N. & E.* 2nd ed. iii, p. 149.
Spizaëtus caligatus, *Horsf. & M. Cat.* i, p. 33; *Blyth, Ibis*, 1866, p. 241; *Hume, Rough Notes*, p. 198; *Hume & Oates, S. F.* iii, p. 26; *Armstrong, S. F.* iv, p. 297; *Hume & Inglis, S. F.* v, p. 9.
Falco limnaëtus, *Bernstein, J. f. Orn.* 1860, p. 419.
Limnaëtus niveus, *Jerdon, B. I.* i, p. 70; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 93.
Spizaëtus andamanensis, *Tytler, P. A. S. B.* 1865, p. 112; *Beavan, Ibis*, 1867, p. 315; *Hume, Rough Notes*, p. 203; *Ball, S. F.* i, p. 52; *Hume, S. F.* ii, p. 142; iv, p. 280.
Limnaëtus caligatus, *Jerdon, Ibis*, 1871, p. 246; *Gurney, Ibis*, 1877, p. 425; *Hume, S. F.* vii, p. 198; *id. Cat.* no. 34; *Bingham, S. F.* ix, p. 143; *Hume, S. F.* xi, p. 10.
Limnaëtus andamanensis, *Walden, Ibis*, 1874, p. 127; *Hume, Cat.* no. 34 bis.

Sadal, H., Bengal; *Morhaita*, Garhwâl.

Coloration. Very similar to that of *S. cirrhatus*, from which the present bird differs in having no crest or only a rudimentary one; the plumage is generally paler, the lower parts in young birds much more commonly pure white, and the head white with brown shaft-stripes; whilst even in the oldest birds some traces of white bars remain on the brown feathers of the thighs, vent, and lower tail-coverts; and the gular and moustachial stripes and the dark spots on the breast are better defined. Soft parts and measurements as in *S. cirrhatus*, and the feathers of the tarsus, as in that species, terminate at or above the division of the toes, and do not cover the base of the middle toe as in *S. nepalensis*.

Besides the ordinary form, there is a dark or melanistic variety, the original *Falco limnaëtus* (or *Limnaëtus horsfieldi*). This is blackish brown throughout, the basal half of the inner webs of the quills and the lower surface of the rectrices near their base being grey. Some specimens are chocolate-brown, not blackish, and in these the three black gular stripes—one median, and one at each side—can be recognized. The bill and cere are black. This dark form, at first supposed to be distinct, has for many years by most writers been regarded as identical with the ordinary variety (*S. caligatus* v. *niveus*), and has been by several naturalists described as the old bird. But in several cases blackish nestlings, the produce of dark-coloured parents, have been observed, in Java by Schlegel and Bernstein, and in Bengal by Cripps; and whilst it is certain that the dark coloration is not due to age, the question has again arisen whether this dark *S. limnaëtus* is not a distinct species. Both Gurney and Hume are doubtful as to whether the two phases belong to the same species; but until further evidence is forthcoming I prefer to keep the two together, as in Buzzards a similar melanistic phase is common. Whitehead, in Labuan, shot from the nest a female in ordinary plumage, paired with a black male (Ibis, 1889, p. 71).

A small insular form (*S. andamanensis*, Tytler) occurs in the Andaman Islands, precisely resembling ordinary *S. limnaëtus* in everything except size (length in a female 25·5; tail 10·25; wing 14·25; tarsus 3·6).

Distribution. Throughout the sub-Himalayan forests as far west as Kumaun and probably to Kashmir; throughout Lower and Eastern Bengal, Assam, and the Burmese countries, the Malay Peninsula, Sumatra, Borneo, Java, and Flores. The dark variety has been found in Lower Bengal, the Malay Peninsula, Sumatra, Borneo, and Java. The supposed occurrence of *S. limnaëtus* in the Indian Peninsula is doubtless due to specimens of *S. cirrhatus* in moult having been mistaken for it.

Habits, &c. Precisely similar to those of *S. cirrhatus*, except that the breeding-season is from February to June, chiefly in April and May.

1213. **Spizaëtus nepalensis.** *Hodgson's Hawk-Eagle.*

Nisaëtus nipalensis, *Hodgson, J. A. S. B.* v, p. 229, pl. 7 (1836).
Nisaëtus nipalensis & pulcher, *Hodgs. J. A. S. B.* vi, p. 361 (1837).
Spizaëtus pulcher, *Blyth, J. A. S. B.* xii, p. 305; xiv, p. 175.
Spizaëtus nipalensis, *Blyth, Cat.* p. 24; *Horsf. & M. Cat.* i, p. 381; *Hume, Rough Notes*, p. 210; *Sharpe, Cat. B. M.* i, p. 267; *Hume, S. F.* iii, p. 446; v, p. 125; *Oates in Hume's N. & E.* 2nd ed. iii, p. 145.
Limnaëtus nipalensis, *Jerdon, B. I.* i, p. 73; *id. Ibis*, 1871, p. 246; *Gurney, Ibis*, 1877, p. 431; *Hume, Cat.* no. 36; *Davison, S. F.* x, p. 336.

The Spotted Hawk-Eagle, Jerdon; *Kanda-panthiong*, Lepcha.

Coloration. Adult. Above dark brown, the scapulars and some other feathers with a coppery gloss; crown and crest-feathers black, the latter 3 to 4 inches long and tipped white; sides of head also black, especially the broad cheek-stripes; ear-coverts streaked with brown; feathers of hind-neck dark brown with very pale edges; median and larger wing-coverts lighter brown than small coverts; quills brown above, pale grey below, with distant dark bars; inner webs mottled with white near the base; traces of dark bars are found on the scapulars and of white on the larger and median coverts; rump and upper tail-coverts barred brown and white. Tail-feathers alternately barred black and brownish grey above, pale grey beneath, the black bands the broader and usually 5 in number, one being concealed by the coverts, extreme narrow tips whitish; chin and throat white, with a broad black band down the middle, and bordered by black on each side; fore-neck light brown with large black drops; rest of lower plumage brown, generally chocolate-brown not very dark, with white spots or imperfect bars interrupted at the shaft on each feather.

Young birds have the head and neck above and at the sides buff or whitish, with larger or smaller brown centres to the feathers, white tips on the mantle and quills; tail with 6 or 7 dark bars; lower parts white or rufous-buff, sometimes with a few blackish-brown spots, chiefly on the breast. The crest is often small or wanting. In a further stage the buff and whitish edges to the upper plumage diminish, and there are large black-brown drops on the lower parts; the thigh-coverts and vent sometimes pale rufous, sometimes brown, and more or less barred with white. Occasionally the tail is without bars. There is a gradual passage to the adult plumage.

The feathering of the tarsus extends to part of the basal phalanx of the middle toe. Bill black; cere hoary black; irides yellow; feet dirty yellowish white (*Hume*).

Length of a male 27·5; tail 12·5; wing 17; tarsus 4·2: of a female—length 29; tail 13·5; wing 18·5; bill from gape 1·9.

Distribution. The Himalayas, from Kashmir to Bhután. This bird visits the plains of Northern India in the cold season, and has been found as far south as Seoni and Pachmarhi, but reports of its occurrence in Southern India and Ceylon probably all refer to the next species. Blyth described a specimen (as *S. pulcher*) received from the Khási hills; but this species has not since been observed in the hills south of Assam, nor in Burma. It occurs, however, in China and Japan.

Habits, &c. A forest Eagle, feeding on pheasants and other game-birds, and on hares and other small mammals. It breeds in India only, so far as is known, in the Himalayas, from January to early in May. The nest, a coarse structure of sticks, is placed in a large tree in dense forest or growing from a cliff; and the eggs, two in number, are greenish white, sparingly spotted and streaked with reddish brown and pale purple, and measuring about 2·7 by 2·2.

1214. **Spizaëtus kelaarti.** *Legge's Hawk-Eagle.*

Spizaëtus nipalensis, *apud Layard, A. M. N. H.* (2) xii, p. 98; *Blyth, Ibis*, 1866, p. 242, pt.; *Hume, S. F.* vii, p. 33.
Spizaëtus kelaarti, *Legge, Ibis*, 1878, p. 202; *id. Birds Ceyl.* p. 51, pl. 1.
Limnaëtus kelaarti, *Hume, S. F.* vii, p. 511; *id. Cat.* no. 36 bis.

This species is very closely allied to *S. nepalensis*, but adults are distinguished by being less dark, the feathers of the head having pale edges, by the malar and gular black stripes being much less developed, by the lower parts from the breast being paler brown, and especially by the white cross-bars on the feathers of the breast and abdomen extending right across the feathers and including the shafts. The feathering of the tarsus extends to the base of the middle toe. The feet are said by Legge to be more robust and the claws larger, the hind claw measuring in a straight line from base to point 2·1, whilst in *S. nepalensis* it never exceeds 1·9.

Young plumage imperfectly known: an immature male is brown above, the feathers with white edges, crown-feathers with broad buff margins; chin white unstriped, throat and fore-neck white with a few brown drops; breast and abdomen light brown with white cross-bars.

Length of female 31; tail 12·5; wing 19; tarsus 4·5; bill from gape 2.

Distribution. Mountains of Ceylon and Southern India. I find in the British Museum two skins, collected by Mr. Bourdillon at Mynall in Travancore, that agree perfectly with Legge's description, except that the claws are not larger than in Himalayan birds, and Hume has already suggested (S. F. x, p. 336) that a skin from the Nilgiris may also have belonged to *S. kelaarti*.

Habits, &c. Similar to those of *S. nepalensis*. Nidification unknown.

1215. **Spizaëtus albiniger.** *Blyth's Hawk-Eagle.*

Nisaëtus alboniger, *Blyth, J. A. S. B.* xiv, p. 178 (1845).
Spizaëtus alboniger, *Blyth, Cat.* p. 26; *id. J. A. S. B.* xix, p. 335; *Sharpe, Cat. B. M.* i, p. 271; *Blyth, Birds Burm.* p. 63; *Hume & Dav. S. F.* vi, p. 12; *Oates, B. B.* ii, p. 191.
Limnaëtus alboniger, *Hume, Cat.* no. 34 ter.

Coloration. Adult. Above black, growing browner on the lower back and wings, black crest 2 to 2·75 inches long; quills brown above, whitish below, with a few distant blackish bars and broad black tips, inner webs paler towards the base; tail blackish brown above, with one very broad pale band about 2 inches from the end, and the tip pale; chin and throat white, with black stripes forming a median gular band; breast white, with very large black spots; abdomen, flanks, and rest of lower parts banded black and white, the bands narrower on the legs.

At an earlier age, the sides of the head and the neck all round are rufous-brown, black-shafted, the breast rufous with smaller black spots; the abdomen banded rufous-brown and white; the tail with 4 blackish cross-bars, the basal one concealed by the coverts, the last subterminal.

In young birds the upper parts are pale brown; the head and neck pale fawn-coloured, all feathers with whitish edges; the crest alone black, tipped with white; quills as in adults; tail with 4 blackish cross-bands, but narrower than in adults and less defined; lower parts buff.

Bill dull black, base plumbeous; irides yellow; feet yellow (*Davison*). The feathers of the tarsus come down to the basal portion of the toes, farthest on the middle toe as in *S. nepalensis*.

Length of a male 21·8; tail 9·5; wing 12·5; tarsus 3; bill from gape 1·4.

Distribution. Malay Peninsula, ranging into the extreme south of Tenasserim and to Borneo. Nothing particular is known of the habits.

Genus **CIRCAËTUS**, Vieillot, 1816.

Head large; bill moderate, much hooked, culmen rounded; nostril oval, oblique, overhung by bristles from the lores; wings long, 3rd or 4th quill longest; primaries much exceeding secondaries; tail rather long; tarsi naked, except near their upper extremities, clad with small rounded or subhexagonal imbricate scales all round. Toes short; mid-toe without its claw about half the length of the tarsus, inner and outer toes without claws subequal; claws short, not much curved, subequal.

This genus comprises five species, four exclusively African and one ranging to Europe and Asia and occurring in India.

1216. **Circaëtus gallicus.** *The Short-toed Eagle.*

Falco gallicus, *Gmel. Syst. Nat.* i, p. 259 (1788).

Circaëtus gallicus, *Blyth, Cat.* i, p. 19; *Horsf. & M. Cat.* i, p. 51; *Jerdon, B. I.* i, p. 76; *Hume, Rough Notes,* p. 217; *id. N. & E.* p. 39; *McMaster, J. A. S. B.* xl, pt. 2, p. 207; *A. Anderson, P. Z. S.* 1872, p. 77; *Sharpe, Cat. B. M.* i, p. 280; *Dresser, Birds Eur.* v, p. 563, pls. 349, 350; *Butler, S. F.* iii, p. 446; v, p. 217; ix, p. 373; *Fairbank, S. F.* iv. p. 253; *Gurney, Ibis,* 1878, p. 146; *Davidson & Wenden, S. F.* vii, p. 74; *Ball, ibid.* p. 199; *Doig, ibid.* p. 503; *Hume, Cat.* no. 38; *Reid, S. F.* x, p. 8; *Davidson, ibid.* p. 288; *Taylor, ibid.* p. 455; *Barnes, Birds Bom.* p. 36; *Oates in Hume's N. & E.* 2nd ed. iii, p. 150.

The Common Serpent Eagle, Jerdon; *Sampmar,* H.; *Sapmaril,* Beng.; *Malpatar,* Can.; *Pamula gedda,* Tel.; *Pambu prandu,* Tam.; *Rawal,* Wagri; *Kondatele,* Yerkli.

Coloration. Adult. Forehead, lores, cheeks, and chin whitish, with black bristles; eyelids covered with white down; ear-coverts brown with fine black lines; upper parts generally brown; shafts on head, back, and wing-coverts blackish; longer scapulars, primary and some secondary quills blackish brown outside, the quills white inside except at the tip and the primaries for some distance up each border; all quills except first primaries with dark cross-bands; tail brown above, white-tipped, whitish below, with dark cross-bands, generally 4 in number, the first concealed by the coverts; the inner webs of all rectrices except the middle pair partly white; chin, throat, and upper breast brown like the back, with dark shafts, some white at the base of the feathers generally showing; lower breast, abdomen, and lower tail-coverts white, with a few brown subdistant spots or bars; lower wing-coverts and axillaries barred brown and white.

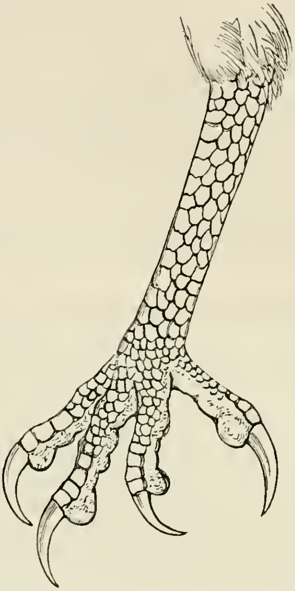

Fig. 89.—Left foot of *C. gallicus*, ½.

In young birds the upper parts are paler; the head whitish with dark shafts, and the white bases of the feathers conspicuous; lower parts white, with brown shaft-streaks on chin, throat, and upper breast, and a few scattered spots of light brown or rufous on the lower breast and abdomen. Birds of the second year have the upper parts like adults, broad brown stripes on the throat and breast, and more numerous brown spots than the nestlings on the abdomen.

Bill pale greyish blue, tip blackish; cere whitish; irides bright orange-yellow; legs and feet pale earthy greyish brown (*Hume*).

Length of a male 26; tail 11·5; wing 21: of a female—length 28; tail 13; wing 22; tarsus 3·75; bill from gape 2·3.

Distribution. Central and Southern Europe, Northern Africa, Central and South-western Asia, extending east to Northern

China, and all over India in suitable tracts from the base of the Himalayas and from Sind to Lower Bengal, but not in Ceylon nor the countries east of the Bay of Bengal. A resident species.

Habits, &c. The Short-toed Eagle is chiefly found in open country and cultivated ground, and is sometimes seen perched on a tree, but more frequently circling in the air or beating over the ground and bushes like a Harrier. Both Jerdon and Hume notice its habit of hovering like a Kestrel, and dropping softly on its prey, not with a rush. It feeds chiefly on snakes, lizards, and frogs, but will eat rats, crabs, or large insects. It breeds on trees (very rarely on cliffs), and lays a single egg between January and May, in a loosely constructed nest of sticks, sometimes lined with grass or green leaves. The egg is a broad oval, bluish white, without spots, and measures about 2·9 by 2·3.

Genus **SPILORNIS**, G. R. Gray, 1840.

This genus is distinguished from *Circaëtus* by having a broad nuchal crest covering the whole nape, and by peculiar coloration, brown above and below in adults, with numerous rounded white spots or ocelli on the lower parts. The bill is rather elongate and well hooked at the end, the festoon on the edge of the upper mandible small or wanting; nostrils oval, oblique; lores nearly naked. The wings are short and rounded, the 4th or 5th quill longest; tarsus, toes, and claws as in *Circaëtus*.

Spilornis ranges throughout the Oriental region and comprises 6 or 7 species, of which three are found within our limits.

Key to the Species.

a. Pale wing-bar near tips of quills broader than adjoining dark interspace.
  a'. Dark brown on back, with metallic gloss; wing 15–21 .... *S. cheela*, p. 357.
  b'. Earthy brown on back, little or no gloss; wing 11–12 .... *S. minimus*, p. 361.
b. Last pale wing-bar narrower than dark interspace in front of it .... *S. elgini*, p. 361.

1217. **Spilornis cheela.** *The Crested Serpent-Eagle.*

Falco cheela, *Latham, Ind. Orn.* i, p. 14 (1790).
Hæmatornis undulatus, *Vigors, P. Z. S.* 1831, p. 170.
Circæëtus nipalensis, *Hodgson, As. Res.* xviii, pt. 2, pl. p. 17 (1833).
Hæmatornis cheela, *Blyth, J. A. S. B.* xiv, p. 180; *id. Cat.* p. 19; *Horsf. & M. Cat.* i, p. 50; *Layard, A. M. N. H.* (2) xii, p. 99.
Spilornis cheela, *Jerdon, B. I.* i, p. 77; *Blyth, Ibis*, 1866, p. 242; *Hume, Rough Notes*, p. 222; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 93; *A. Anderson, P. Z. S.* 1872, p. 77; *Sharpe, Cat. B. M.* i, p. 287; *Blyth & Wald. Birds Burm.* p. 60; *Hume & Oates, S. F.* iii, p. 28; *Fairbank, S. F.* iv, p. 253; *Wardlaw Ramsay, Ibis*, 1877, p. 454; *Blanford, S. F.* v, p. 245; *Hume, Cat.* no. 39; *Scully, S. F.* viii, p. 224; *Vidal, S. F.* ix, p. 31; *Reid, S. F.* x, p. 8; *Davidson, ibid.* p. 288; *Davison, ibid.* p. 336; *C. H. T. Marshall,*

Ibis, 1884, p. 407; *Oates, B. B.* ii, p. 193; *id. in Hume's N. & E.* 2nd ed. iii, p. 153; *Barnes, Birds Bom.* p. 37; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 571; *Littledale, Jour. Bom. N. H. Soc.* i, p. 195.
Spilornis undulatus, *Gurney, Ibis*, 1878, p. 90.
Spilornis rutherfordi, *Swinhoe, Ibis*, 1870, p. 85; *Blyth & Wald. Birds Burm.* p. 60; *Hume, S. F.* iii, p. 28; v, p. 10; *Hume & Dav. S. F.* vi, p. 14; *id. Cat.* no. 39 ter; *Bingham, S. F.* ix, p. 144; *Oates, B. B.* ii, p. 194; *id. in Hume's N. & E.* 2nd ed. iii, p. 156; *Cripps, S. F.* xi, p. 11.

South-Indian and Ceylonese Race.

Falco albidus, *Cuv. Temm. Pl. Col.* pl. 19 (1824).
Buteo melanotis, *Jerdon, Madr. Jour. L. S.* xiii, p. 166 (1844).
Hæmatornis spilogaster, *Blyth, J. A. S. B.* xxi, p. 351 (1852); *Layard, A. M. N. H.* (2) xii, p. 100.
Spilornis spilogaster, *Blyth, Ibis*, 1866, p. 243; *Blanford, J. A. S. B.* xl, pt. 2, p. 270; *Hume, S. F.* vii, p. 512; *id. Cat.* 39 bis A; *Legge, Birds Ceylon*, p. 61; *Parker, Ibis*, 1886, p. 182; *Oates in Hume's N. & E.* 2nd ed. iii, p. 157.
Spilornis bacha, *apud Jerdon, Ibis*, 1871, p. 335; *Holdsworth, P. Z. S.* 1872, p. 412.
Spilornis minor, *Hume, N. & E.* p. 42 (1873).
Spilornis melanotis, *Sharpe, Cat. B. M.* i, p. 289; *Hume & Bourd. S. F.* iv, p. 358; *Fairbank, S. F.* v, p. 392; *Gurney, Ibis*, 1878, p. 97; *Davidson & Wenden, S. F.* vii, p. 74; *Ball, ibid.* p. 199; *Hume, ibid.* p. 340; *id. Cat.* no. 39 bis; *Vidal, S. F.* ix, p. 32; *Butler, ibid.* p. 373; *Davison, S. F.* x, p. 337; *Oates in Hume's N. & E.* 2nd ed. iii, p. 156; *Barnes, Birds Bom.* p. 37.

Andaman Race.

Hæmatornis cheela, *Beavan, Ibis*, 1867, p. 314; *Ball, J. A. S. B.* xxxix, pt. 2, p. 240.
Spilornis bacha, *apud Hume, Rough Notes*, p. 230, pt.
Spilornis davisoni, *Hume, S. F.* i, p. 307 (1873); ii, pp. 147, 491; iv, p. 281; *Gurney, Ibis*, 1878, p. 98; *Hume, Cat.* no. 39 quat.
Spilornis rutherfordi, *apud Walden, Ibis*, 1873, p. 298.

Furj baj, Dogra Chil, H. (Sahâranpur); *Tilai baj, Sabchur*, B.; *Nalla pamula gedda*, Tel; *Botta Genda*, Gond; *Goom*, Can.; *Murayala*, Mahr.; *Rajaliya*, Cing.; *Kadumbien*, Tam. (Ceylon); *Doun-zoon*, Burmese.

Coloration. Adult. Crown and nape with full crest black, basal half or more of the feathers white; nape-feathers generally tipped with brown; lores nearly naked, bearing a few black bristles only; ear-coverts blackish ashy; upper parts dark brown with a rich purple or ruddy gloss; smaller wing-coverts blackish, generally with small white spots; quills blackish, with three bars brown above, whitish below, that farthest from the base of the feathers is by far the broadest, and is 3 or 4 inches from the tips, the basal two are sometimes confluent; upper tail-coverts tipped white, as are sometimes the back-feathers, scapulars, and secondary quills; tail brown at the base, thence almost black, with one broad white or whity-brown bar, tip pale; lower parts brown, sometimes dark umber, sometimes pale and tawny, sometimes rufous;

chin and throat more or less tinged or streaked with black or ashy; fore-neck and upper breast, as a rule, closely barred with pale brown; lower breast and abdomen, flanks, under wing-coverts, and axillaries ornamented with ocelli that are white surrounded with dark brown, these spots passing into dark-edged cross-bars, more or less broken, on the vent, thigh-coverts, and lower tail-coverts. The variation in the coloration of the lower parts and in size is unusually great in this Eagle.

In young birds the crown and nape-feathers are white, with black and brown tips; the upper plumage of various shades of brown, the ends of the feathers generally darker, and the base white, many feathers with white tips; lower parts, including the wing-lining, white with dark shafts or shaft-stripes on the breast; the whitish bars on the wings and tail are more numerous than in adults, generally there are 2 well-marked pale bands on the tail beyond the coverts.

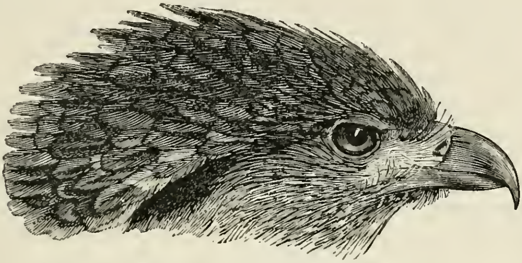

Fig. 90.—Head of *S. cheela*, $\frac{3}{8}$.

As the bird grows older bars and ocelli appear on the lower parts. When nearly adult, there is still much white on the wing-lining, and remains of the second pale tail-bar may often be traced even in full-grown birds. In the intermediate stage the chin is very black, there are still dark shaft-stripes to the barred breast-feathers, and sometimes a few small white ocelli on the upper breast.

Bill plumbeous, bluish black at tip and on culmen; cere, skin of lores, and gape bright, or in some dingy lemon-yellow; irides intense yellow; legs and feet pale dingy yellow.

Distribution. Throughout the Oriental region in suitable places, ascending the Himalayas to 4000 or 5000 feet. Very rare in the north-west of India, but I have seen this bird even in the Sind hills. There are several well-marked races so different in size and coloration as to have been generally kept distinct; these are:—

(1) Typical *S. cheela*. This is the largest form—length about 29 inches; tail 13; wing 20; tarsus 4; bill from gape 1·9: male rather smaller than female in general, but there is no constant difference. The breast and fore-neck are closely and distinctly barred, sometimes the throat also, the chin and throat are often black, and in adults there is a single broad whitish band on the tail. This form is found in Northern India from Sind and Kashmir

to Bengal, especially at the base of the Himalayas, and stragglers have been met with throughout the Peninsula, there being one from Mysore in the Hume collection.

(2) The race found in Assam, Cachar, and Burma is by Hume, rightly, I think, identified with the Hainan *S. rutherfordi*. The breast is generally barred, though less distinctly than in typical *S. cheela*, and the barring becomes less distinct in many Southern specimens. The chin and throat are dark ashy grey. As a rule, there is a second pale tail-bar, less distinct than the posterior one, just beyond the coverts; wings 17 to 18 inches long in Assamese and North-Burmese birds, in Tenasserim specimens the whole length is 23 to 28, tail 9·5 to 11, wing 15·25 to 18, tarsus 3·5 to 3·62.

(3) The Andaman race *S. davisoni*, specimens of which have also been obtained in the Nicobars. This is simply a miniature of *S. rutherfordi*. Length 22 to 24, tail 10, wing 15, tarsus 3·7, bill from gape 1·7. Some Tenasserim specimens seem undistinguishable.

Further south, in the Malay Peninsula, Sumatra, Java, and Borneo, is another small form, *S. pallidus*, Walden (Ibis, 1872, p. 363; Cat. B. M. i, p. 290, pl. ix), without any bars on the breast; wing about 14.

(4) The common form throughout the Indian Peninsula differs from typical *S. cheela* in wanting the barring on the breast, or only exhibiting the merest trace of it, in rarely having any black on the chin, and in often having two bands on the tail, the upper band being more or less indistinct. To the northward this race is but little smaller than *S. cheela*, and has a wing of about 18, but to the southward and in Ceylon the wing varies from 14·5 to 17. This form is *S. melanotis*; the Ceylon race has been distinguished as *S. spilogaster*. If we had only this race and typical *S. cheela* to consider they might well be separated, but some small South-Indian and Ceylonese birds are, as Gurney has shown, not distinguishable from specimens from the Malay Peninsula and Sumatra, and these pass gradually into the large northern *S. cheela* through *S. rutherfordi*. This case is therefore similar to that of *Caprimulgus macrurus* (p. 189). Probably *Spilornis cheela* offers the most remarkable instance in Indian birds of the diminution of size to the southward.

Habits, &c. This Eagle is usually found on trees near water, especially the fine trees along irrigation-channels and canals in Upper India, and along stream-beds in the lower Himalayas and in the Central Provinces and Southern India. It may also be seen soaring and may be at once recognized by the strongly marked bars on its wings and tail, and by its loud plaintive cry, which it frequently utters on the wing. It feeds on snakes, lizards, and frogs, occasionally on small mammals, on birds, and on insects. It breeds on trees in March, April, and May, making a nest of sticks about 2 feet in diameter, lined with a pad of green leaves. It lays usually one egg, sometimes two, more or less densely streaked and spotted with brownish red and purple, and measuring about 2·78 by 2·2.

1218. **Spilornis minimus.** *The Little Nicobar Serpent-Eagle.*

Spilornis minimus, *Hume, S. F.* i, p. 464; ii, p. 149; iv, p. 282; *id. Cat.* no. 39 sept.; *Gurney, Ibis,* 1878, p. 101.

Coloration. Adult. Crown and nape black, the feathers white at the base and for more than half their length; upper parts dull umber-brown, with little or no metallic gloss; quills blackish at the end, then a broad bar pale brown below, brown above, next a blackish bar narrower than the pale one, then another pale band, inner webs above this mostly white; tail blackish brown, with two paler brown bars; ear-coverts and lower parts brown, but paler than back; upper breast without bars; lower breast, abdomen, and thigh-coverts with broad white spots, the borders of the spots scarcely darker than the spaces between; inner wing-coverts chiefly white.

Young very similar to that of *S. cheela.*

Bill light blue, dark horny at tip; cere, gape, orbital skin, and irides bright yellow; legs and feet also yellow (*Hume*).

Length about 19; tail 8; wing 11·5; tarsus 3; bill from gape 1·6.

Distribution. The Nicobar Islands, whence several specimens were obtained by Mr. Hume.

1219. **Spilornis elgini.** *The Andaman Serpent-Eagle.*

Hæmatornis elgini, *Tytler, Blyth, J. A. S. B.* xxxii, p. 87 (1863); *id. Ibis,* 1863, p. 118; *Beavan, Ibis,* 1867, p. 314.
Spilornis bacha, *apud Hume, Rough Notes,* p. 230, pt.; *Ball, J. A. S. B.* xli, pt. 2, p. 275; *id. S. F.* i, p. 52; *nec* Daudin.
Spilornis elgini, *Walden, Ibis,* 1873, p. 299; *Hume, S. F.* ii, p. 144; *Sharpe, Cat. B. M.* i, p. 291; *Gurney, Ibis,* 1878, p. 101; *Hume, Cat.* no. 39 sex.

Coloration. Lores and space round eye naked, more so than in *S. cheela,* only bearing a few scattered whitish hairs; crown and nape black, the feathers more or less fringed with brown and their basal two-thirds white; plumage above and below dark chocolate-brown, with a slight ruddy gloss above; a few minute white specks of irregular form on the upper wing-coverts and upper tail-coverts, and frequently on the back and scapulars, and larger round white spots on the breast (in many cases extending to the upper breast), abdomen, under tail- and wing-coverts, flanks and axillaries; no barring on the breast; moustachial band and ear-coverts blackish; quills blackish brown, with from 3 to 5 narrow broken cross-bars, pale brown above, whitish below, sometimes almost obsolete; tail black, with two pale cross-bars, whity brown above, whitish below, the posterior the broader, but less than an inch wide.

Young birds appear only to differ in being rather paler, with the feathers of the head, above and below, mostly white; the crown and nape with brown subterminal bands, and the chin with brown streaks. There are three pale cross-bands on the tail, that in front the narrowest. In a very large series now in the British Museum, not one has white underparts like the young of *S. cheela.*

Bill pale horny, bluish horny, or fleshy, darker on the culmen; cere, lores, and orbital region bright or lemon yellow; irides bright yellow; feet and legs yellow (*Hume*).

Length about 22; tail 9·25; wing 14; tarsus 3·25; bill from gape 1·6.

Distribution. The Andaman Islands; there is also one specimen in the British Museum from the Nicobars.

Genus **BUTASTUR**, Hodgson, 1843.

This is a genus that was at one time placed amongst the Buzzards, but, despite some resemblance in habits, the differences in the characters of the tarsus and in the eggs show that the alliance is not real. In the two characters named, the members of the present genus, or Buzzard-Eagles, as they have been termed, come nearest to *Circaëtus*, from which, however, they differ in size and plumage, shape of wing, and proportions of toes.

In *Butastur* (*Poliornis* of Kaup) the size is small, scarcely exceeding that of a Crow. The bill is compressed and the culmen curved from the base; the commissure generally has a festoon, sometimes a well-marked one; the nostrils are oval and oblique. The wings are long, reaching nearly to the end of the tail, which is slightly rounded; the 3rd quill is longest, the 4th nearly equal to it, the 2nd and 5th considerably shorter and not very different in length, the first four emarginate inside. Tarsus naked, without transverse shields, covered with imbricate scales that are rather larger in front; toes short. There is no difference in size between the sexes.

Four species are known, one of which is African, the other three occur in India or Burma.

Key to the Species.

a. Tail more or less rufous, with narrow dark cross-bars or none.
  a'. Quills chiefly brown above .... *B. teesa*, p. 362.
  b'. Quills chiefly rufous above .... *B. liventer*, p. 364.
b. Tail not tinged with rufous, and with broad dark cross-bands broader than the interspaces in adults .... *B. indicus*, p. 365.

1220. **Butastur teesa.** *The White-eyed Buzzard-Eagle.*

Circa teesa, *Franklin, P. Z. S.* 1831, p. 115.
Astur hyder, *Sykes, P. Z. S.* 1832, p. 79.
Buteo teesa, *J. E. Gray in Hardw. Ill. Ind. Zool.* ii, pl. 30; *Jerdon, Madr. Jour. L. S.* x, p. 76.

Butastur teesa, *Hodgs. J. A. S. B.* xii, p. 311; *Sharpe, Cat. B. M.* i, p. 295; *Blanf. Eastern Persia,* ii, p. 113; *Hume & Dav. S. F.* vi, p. 19; *Ball, S. F.* vii, p. 199; *Doig, S. F.* viii, p. 370; *Hume, Cat.* no. 48; *Vidal, S. F.* ix, p. 33; *Butler, ibid.* p. 374; *Reid, S. F.* x, p. 10; *Oates, B. B.* ii, p. 195; *id. in Hume's N. & E.* 2nd ed. iii, p. 158; *Barnes, Birds Bom.* p. 44; *St. John, Ibis,* 1889, p. 153.

Poliornis teesa, *Kaup, Class. Säugth. Vög.* p. 122 (1844); *Blyth, Cat.* p. 21; *Horsf. & M. Cat.* i, p. 40; *Jerdon, B. I.* i, p. 92; *Hume, Rough Notes,* p. 286; *A. Anderson, P. Z. S.* 1872, p. 78; 1875, p. 25; *Hume, S. F.* i, p. 159; iii, p. 31; *Butler, S. F.* iii, p. 447.

The White-eyed Buzzard, Jerdon; *Tisa,* H.; *Buda-mali gedda,* Tel.; *Yellur,* Yerkli.

Coloration. Adult. Upper parts brown, often tinged with rufous, the feathers with dark shafts; a white nuchal patch formed by the bases of the feathers; narrow forehead and lores white; median wing-coverts much mottled and sometimes barred with white; quills brown above, whitish beneath, pure white towards the base, generally with dark bars towards the tips; the primaries with blackish ends; upper tail-coverts usually more rufous than back; tail-feathers either rufous or brown, with a rufous tinge above, whity brown below, each with a subterminal blackish patch, and in most birds with narrow subdistant blackish bands, which apparently grow indistinct with age and disappear in old birds; chin and throat white, with three dark brown stripes, one median, two others forming a border to the white on each side; sides of head and neck and breast brown; the breast-feathers dark-shafted, becoming spotted and banded with white on the lower breast and abdomen, and passing into white, more or less banded with pale rufous, on the lower abdomen, thigh-coverts, and lower tail-coverts.

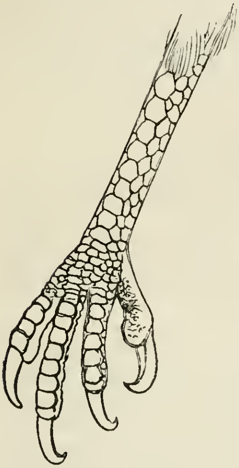

Fig. 91.—Left foot of *B. teesa*, ⅔.

In the young the feathers of the crown and nape have rufous or buff edges, or the head is buff or white with dark shaft-stripes on the crown; there is a broad buff or white supercilium; the ear-coverts are partly or wholly brown; wing-coverts much mixed with white; and the lower parts are white or buff, with dark shaft-stripes on the throat, breast, and upper abdomen. Gular stripes wanting or very narrow. The passage into the adult plumage is gradual, in one stage arrow-head markings replace the stripes on the lower plumage.

Cere, gape, and base of lower mandible orange, terminal portion of both mandibles black; irides pale yellowish white in adults, brown in young birds; legs and feet dingy orange-yellow.

Length about 17; tail 7; wing 11·5; tarsus 2·3; mid toe without claw 1·3; bill from gape 1·3.

Distribution. Common throughout the greater part of India, in open plains and cultivated country, in low scrub and occasionally in high jungle, but not in hill-forest; rare in Malabar and Lower Bengal and in Southern India generally, and wanting in Ceylon and in the Himalayas; not rare in the desert regions of Western India and in Baluchistan; to the eastward this species is found throughout Pegu and probably Northern Burma generally, extending to Northern Tenasserim.

Habits, &c. This is a bird with a quick flight, compared by Jerdon to that of the Kestrel. It may generally be seen seated on trees or bushes or the ground, and it feeds on small mammals and reptiles, frogs, crabs, and insects. It has a peculiar plaintive cry. The nest is of sticks, without lining, and placed in a thick tree, very often a mango: 3 eggs, or sometimes 4, are laid about April; they are, as a rule, nearly white, but spotted eggs have occasionally been found. The eggs measure about 1·83 by 1·53.

1221. **Butastur liventer.** *The Rufous-winged Buzzard-Eagle.*

Falco liventer, *Temm. Pl. Col.* pl. 438 (1827).

Poliornis liventer, *Walden, Tr. Z. S.* viii, p. 37; *Hume, N. & E.* p. 50; *id. S. F.* i, p. 319; iii, p. 31; *Blyth & Wald. Birds Burm.* p. 61; *Armstrong, S. F.* iv, p. 299.

Butastur liventer, *Sharpe, Cat. B. M.* i, p. 296; *Oates, S. F.* v, p. 142; vii, p. 40; *Hume & Dav. S. F.* vi, p. 21; *Hume, Cat.* no. 48 ter; *Oates, B. B.* ii, p. 196; *id. in Hume's N. & E.* 2nd ed. iii, p. 161.

Coloration. Adult. Head and neck all round ashy brown; chin and throat more or less white; back and wing-coverts rufescent brown; a variable amount of white or pale rufous mottling and barring on the wing-coverts; rump and upper tail-coverts dull rufous-brown; all the feathers of the upper surface dark-shafted; quills bright rufous outside, the tips and the outer web towards the end brown, white inside, whity brown near the end, with narrow dark bars on the secondaries and the terminal portion of the primaries; tail bright rufous above, whitish below, crossed by 4 or 5 narrow dark bars, the last broader and subterminal; these bars disappear with age; lower parts greyish brown, the breast dark-shafted; abdomen with spots and bars of white increasing posteriorly; vent, lower tail-coverts, and wing-lining pure white. Axillaries light rufous-brown barred with white.

Young birds are browner, without grey on the head, neck, or breast; there is a whitish supercilium, and the white bases of the feathers show on the nape; the crown is light brown or rufous with dark shaft-stripes; indeed the shaft-stripes are conspicuous throughout the plumage; the upper tail-coverts show sometimes pale bands; the chin and throat are white, with dark median and lateral stripes; and the brown of the breast is often barred with white or buff.

Bill and cere orange, the tips of both mandibles brown; iris yellow; legs yellow; claws dark horny (*Oates*).

Length 15·5; tail 5·75; wing 11; tarsus 2·4; bill from gape 1·35.

Distribution. Probably throughout Burma; common in Pegu, rare or wanting in Southern Tenasserim, found also in Siam, Borneo, Java, and Celebes.

Habits, &c. Very similar to those of *B. teesa*, this species inhabiting open country and the banks of rivers, and feeding on snakes and crabs (freshwater). The nest has been described by Oates and Feilden, who found it on trees in March; both nest and eggs precisely like those of *B. teesa.*

1222. **Butastur indicus.** *The Grey-faced Buzzard-Eagle.*

Falco indicus, *Gm. Syst. Nat.* i, p. 264 (1788).
Falco poliogenys, *Temm. Pl. Col.* pl. 325 (1825).
Buteo pygmæus, *Blyth, J. A. S. B.* xiv, p. 177 (1845); *id. Cat.* p. 29.
Poliornis poliogenys, *Blyth, Ibis*, 1866, p. 245; *Hume, Rough Notes*, p. 290.
Butastur indicus, *Sharpe, Cat. B. M.* i, p. 297; *Hume & Dav. S. F.* vi, p. 19; *Hume, Cat.* no. 48 bis; *Oates, B. B.* ii, p. 197.
Poliornis indicus, *Blyth, Birds Burm.* p. 61.

Coloration. Above brown, dark-shafted; the head, neck, and back greyish; sides of forehead and lores white, with black bristles; sides of head more ashy, the white bases of the feathers showing slightly on the nape; wing-coverts and outer webs of secondaries tinged and mottled with rufous to a varying extent; quills brown above, the inner webs rufous-brown, whitish below, white towards the base, subdistantly barred with dark brown; tips of primaries blackish; upper tail-feathers tipped and barred white; tail brown above, whity brown below, with usually 4 (rarely 3 or 5) distinct broad blackish cross-bars, nearly or quite as broad as the interspaces, the first bar partly concealed by the tail-coverts, the last not quite at the tip; the bars are indistinct or wanting on the outer pair of tail-feathers; throat white, with three dark stripes, one median, two lateral, sometimes indistinct; breast and abdomen rufescent ashy brown, a few white spots on the upper breast, which become irregular bars on the lower breast and abdomen, the brown bars growing narrower on the lower abdomen and thigh-coverts; under tail-coverts white.

In the young the feathers of the crown and nape have rufous edges and conspicuous white bases, there is no grey on the head or back, and the lower parts are buffy white with rufous-brown longitudinal streaks; the dark marks on the tail are much narrower than the spaces between and often indistinct.

End of both mandibles black; base of bill, cere, and gape orange-yellow; irides bright yellow; legs and feet the same.

Length about 17; tail 7·5; wing 13; tarsus 2·1; bill from gape 1·3.

Distribution. Eastern Asia from Japan and China to the

Malayan Peninsula and islands as far as the Philippines, Celebes, and New Guinea. In Tenasserim this bird has been found, though not common, as far north as Amherst. Very little is known of the habits, which apparently are similar to those of other species of *Butastur*.

Genus **HALIAËTUS**, Savigny, 1810.

Bill stout; culmen straight at the base, then greatly curved; festoon generally well marked but variable. Nostrils rounded. Wings long; 3rd quill generally longest, 4th and 5th but little shorter. Tail rounded or cuneate at the end. Tarsus stout, of moderate length, its upper third feathered in front, middle third or more scutate in front. Toes scutate above; claws moderate in size, not very unequal, grooved beneath.

This genus contains the Sea-Eagles proper, and is found on most tropical and temperate sea-coasts, except those of South America. Three species are Indian, and they differ somewhat in structure, so that each has been made the type of a distinct genus.

Key to the Species.

a. Wing less than 24 inches long.	
a′. A well-marked ruff of lanceolate feathers; tail slightly rounded; a white band across middle of tail in adults	*H. leucoryphus*, p. 366.
b′. No distinct ruff; outer tail-feathers at least 1 inch shorter than middle pair; head, lower parts, and end of tail white in adults.	*H. leucogaster*, p. 368.
b. Wing 24-26 inches; tail wedge-shaped, white in adults	*H. albicilla*, p. 369.

1223. **Haliaëtus leucoryphus.** *Pallas's Fishing-Eagle.*

Aquila leucorypha, *Pall. Reis. Russ. Reichs*, i, p. 454 (1771).

Haliætus fulviventer, *Vieill. Nouv. Dict. d'Hist. Nat.* xxviii, p. 283 (1819).

Falco macei, *Temm. Pl. Col.* pls. 8, 223 (1824).

Haliaëtus macei, *Blyth, Cat.* i, p. 30; *Horsf. & M. Cat.* i, p. 55; *Irby, Ibis*, 1861, p. 222; *Hume, N. & E.* p. 45; *id. S. F.* i, p. 159; *Adam, S. F.* i, p. 368; *Butler, S. F.* iii, p. 447.

Haliætus unicolor, *J. E. Gray in Hardw. Ill. Ind. Zool.* i, pl. 19 (1830-32); *Jerdon, Ibis*, 1871, p. 336.

Haliæëtus albipes, *Hodgson, J. A. S. B.* v, p. 228 (1836).

Cuncuma albipes, *Hodgson, J. A. S. B.* vi, p. 367.

Haliætus fulviventer, *Jerdon, B. I.* i, p. 82; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 265.

Haliaëtus leucoryphus, *Blyth, Ibis*, 1866, p. 244; *Hume, Rough Notes*, p. 242; *id. Cat.* no. 42; *A. Anderson, P. Z. S.* 1872, p. 77; *Sharpe, Cat. B. M.* i, p. 308; *Gurney, Ibis*, 1878, p. 454; *Hume & Dav. S. F.* vi, p. 17; *Ball, S. F.* vii, p. 199; *Cripps, ibid.* p. 249; *Scully, S. F.* viii, p. 224; *Doig, ibid.* p. 370; *Reid, S. F.* x, p. 9; *Oates, B. B.* ii. p. 200; *id. in Hume's N. & E.* 2nd. ed. iii, p. 163; *Barnes,* *Birds Bom.* p. 40; *Hume, S. F.* xi, p. 12; *Sharpe, Yarkand Miss., Aves*, p. 8.

The Ring-tailed Sea-Eagle, Jerdon; *Machurang, Machmanga, Dhenk, Patrás*, H.; *Koral, Machkoral, Bala*, Beng.; *Kankam*, Nepal; *Kokna, Ugus*, Kol.

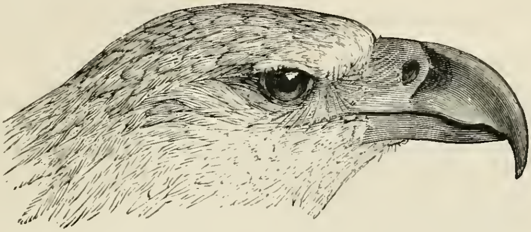

Fig. 92.—Head of *H. leucoryphus*, ½.

Coloration. Forehead whitish; crown, nape, and hind-neck fulvous, passing on the upper back into the dark brown of the back, wings above and below, rump, base and end of tail; the brown with a slight purplish gloss in fresh plumage; sides of head and neck with the chin and throat whitish, rest of lower parts brown, darker on the lower abdomen and flanks; a white band about 4 inches wide across the tail, about 3 inches from the end.

Young almost uniformly brown above, quills and tail-feathers very dark brown; ear-coverts dark; lower parts paler and greyer than upper.

Bill dark plumbeous, cere and gape light plumbeous; irides greyish yellow; legs and feet dull white; claws black (*Oates*).

There is a distinct ruff of long lanceolate feathers around the neck, the outer tail-feathers are not much shorter than the middle pair, and the wings nearly or quite reach the end of the tail. Lower fourth of the tarsus not scutate in front.

Length of a female about 33; tail 12; wing 23; tarsus 4·2; bill from gape 2·9. In males the wing is 1 to 2 inches shorter.

This bird is the type of *Cuncuma* of Hodgson, a name wrongly applied by some writers to *H. leucogaster*. It is a question whether the present form is not entitled to generic distinction.

Distribution. Probably throughout Southern and Central Asia as far west as the Persian Gulf, the Caspian and the Black Sea. Common in Northern India and in Burma, but wanting in Southern India and Ceylon.

Habits, &c. This is a river and marsh haunter in India, and does not appear to have been observed on the coast in Northern India and Burma; it is common about large rivers, tidal creeks, lakes, and the large marshes or jheels of the alluvial plains through which the Indus, Ganges, Brahmaputra, Irrawaddy, and other rivers flow. It has a loud shrieking call-note, and it feeds principally on fish, but also on water-birds, snakes, frogs, &c. The breeding-season extends from November to February; the nest, a huge platform of sticks, is placed in the fork of a tree; and the eggs, usually 3 but sometimes 2 or 4 in number, are greyish white and unspotted, very dark green when looked through against a light, and about 2·77 long by 2·17 broad.

1224. **Haliaëtus leucogaster.** *The White-bellied Sea-Eagle.*

Falco leucogaster, *Gmel. Syst. Nat.* i, p. 257 (1788).
Falco blagrus, *Daudin, Traité*, ii, p. 70 (1800).
Haliæetus blagrus, *Jerdon, Madr. Jour. L. S.* x, p. 65.
Ichthyaëtus cultrunguis, *Blyth, J. A. S. B.* xi, p. 110 (1842).
Blagrus leucogaster, *Blyth, Cat.* p. 30; *id. Birds Burma*, p. 64.
Haliaëtus leucogaster, *Horsf. & M. Cat.* i, p. 56; *Jerdon, B. I.* i, p. 84; *Ball, J. A. S. B.* xli, pt. 2, p. 276; *id. S. F.* i, p. 53; vii, p. 199; *Sharpe, Cat. B. M.* i, p. 307; *Hume & Dav. S. F.* vi, p. 17; *Gurney, Ibis*, 1878, p. 453; *Hume, Cat.* no. 43; *Vidal, S. F.* ix, p. 32; *Legge, Birds Ceyl.* p. 67; *Simson, Ibis*, 1882, p. 90; *Oates, B. B.* ii, p. 199; *id. in Hume's N. & E.* 2nd ed. iii, p. 161; *Barnes, Birds Bom.* p. 42.
Cuncuma leucogaster, *Hume, Rough Notes*, p. 259; *id. N. & E.* p. 48; *id. S. F.* ii, p. 149; iv, pp. 423, 461; *Armstrong, S. F.* iv, p. 298.

The Grey-backed Sea-Eagle, Jerdon; *Kohassa*, H.; *Samp-mar*, in Orissa; *Ala*, Tam. and Tel.; *Loko-rajaliya*, Cing.; *Kadal-Ala*, Tam. in Ceylon.

Coloration. Head and neck all round, lower parts, and terminal third of tail white, sometimes with narrow dark shafts on the neck and breast; back and wings dark ashy tinged with brown, quills and basal two-thirds of tail blackish.

The young are brown above, many of the feathers with fulvous edges, broadest and whitish on the head; ear-coverts dark; lower parts fulvous or rufous white, more or less mixed with brown, the upper breast all brown; tail white or whitish, with the terminal portion brown but pale tipped.

Bill dark leaden; cere paler; irides hazel-brown; legs and feet whitish (*Legge*). There is no ruff around the neck; the wings extend to (or according to Jerdon beyond) the wedge-shaped extremity of the tail. Tarsus scutate in front almost to base of toes, and a patch of irregular broad scutes behind.

Length of female about 28, tail 11, wing 22·5, tarsus 3·7, bill from gape 2·3; male smaller, wing 21.

Distribution. Coasts of India, Ceylon, and Burma, from near Bombay to the Malay Peninsula, and throughout the Malay Archipelago to Australia, Tasmania, and Western Polynesia. Reports of the occurrence of this species in Africa have not been confirmed.

Habits, &c. This is the Sea-Eagle of the Indian Seas, very common on the coasts and especially on islands, rare inland, though it occasionally appears to stray up the rivers and has been found breeding at Dacca by Simson, whilst Ball records it from Chutia Nagpur. It lives chiefly on fish and sea-snakes, which it captures from the water, but it will also eat dead fish or crabs, and it not unfrequently robs the Osprey of its prey. It has a loud clanging cry, chiefly uttered in the breeding-season from October to February. It lays two whitish eggs, deep green when held before a light, and measuring about 2·81 by 2·07, in the usual large nest of sticks, placed on a tree and lined with green leaves, the same nest being used for many years in succession.

1225. **Haliaëtus albicilla.** *The White-tailed Sea-Eagle.*

Vultur albicilla (*errore* albiulla), *Linn. Syst. Nat.* p. 123 (1766).

Haliaëtus albicilla, *Leach, Syst. Cat. Mamm. &c. B. M.* (1816) p. 9; *Hume, Ibis,* 1870, p. 438; 1871, p. 404; *S. F.* i, p. 159; vii, p. 341; *id. Cat.* no. 42 bis; *Jerdon, Ibis,* 1871, p. 336; *Blyth, Ibis,* 1872, p. 87; *A. Anderson, P. Z. S.* 1872, p. 78; *Sharpe, Cat. B. M.* i, p. 302; *Murray, Vert. Zool. Sind,* p. 83; *Barnes, Birds Bom.* p. 40.

Haliaëtus pelagicus, *Hume, Rough Notes,* p. 253; *nec Pallas.*

Haliaëtus brooksi, *Hume, Rough Notes,* p. 255 (1870); *id. Ibis,* 1870, p. 438.

Coloration. Upper plumage brown; the head, neck, and smaller coverts paler, sometimes almost whity brown, with narrow dark shaft-stripes; quills blackish; lower parts paler than upper, palest on the chin, throat, and fore-neck, many feathers with pale tips; tail white except at the extreme base.

The young are brown, sometimes very dark, sometimes pale; the basal portion of all feathers fulvous or white, and usually exposed, on the lower parts especially; tail-feathers white, more or less mottled and edged with brown.

Cere and bill yellow in adults; cere yellowish brown, bill black in young birds; iris yellow (brown in the young); feet yellow. There is a slight ruff of lanceolate feathers, far less distinct than in *H. leucoryphus,* and the end of the tail is wedge-shaped, the middle feathers being considerably longer than the outer.

Length of a female 34 inches; tail 13; wing 26; tarsus 4·5; bill from gape 3. Males are rather less, wing 24·5.

Distribution. All Europe and Northern Asia, also Greenland. In India this bird appears to be a cold-weather visitant to the Punjab, North-west Provinces, and Sind.

Habits, &c. Very similar to those of other fishing Eagles. In India this species has been observed to haunt large marshes. It feeds mainly on fish.

Genus **POLIOAËTUS**, Kaup, 1847.

Bill shorter than in *Haliaëtus,* culmen arched from the cere, festoon prominent, nostrils oval; wings rounded, 4th and 5th quills longest; tail moderate, slightly rounded. Tarsus feathered in front for one third of its length or rather more, the rest covered in front and behind with large rectangular scutæ, the sides reticulated; the toes with broad scales above and pointed scales beneath; the outer toe partially reversible, but not completely, as in the Osprey; claws strong, much curved, rounded beneath.

This genus has been classed with the Ospreys, but it agrees with other Eagles in anatomy, and the feathers have an aftershaft. There are two species, both Indian. They are inland birds, and prefer rivers to the sea.

Key to the Species.

a. Basal three-fourths of all tail-feathers white in adults, mottled in young .... *P. ichthyaëtus*, p. 370.
b. Middle tail-feathers brown throughout ...... *P. humilis*, p. 371.

1226. **Polioaëtus ichthyaëtus.** *The Large Grey-headed Fishing-Eagle.*

Falco ichthyætus, *Horsf. Tr. Linn. Soc.* xiii, p. 136 (1821).
Ichthyaëtus horsfieldi, *Blyth, J. A. S. B.* xi, p. 110 (1842).
Pontoaëtus ichthyaëtus, *Blyth, Cat.* p. 30; *Layard, A. M. N. H.* (2) xii, p. 101.
Pandion ichthyaëtus, *Horsf. & M. Cat.* i, p. 52.
Polioaëtus ichthyaëtus, *Kaup in Jardine's Cont. Orn.* 1850, p. 73; *Jerdon, B. I.* i, p. 81; *Blyth, Ibis,* 1866, p. 243; 1872, p. 88; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 265; *Hume, Rough Notes*, p. 239; *Jerdon, Ibis,* 1871, p. 336; *Hume, N. & E.* p. 43; *S. F.* iii, p. 28; v, pp. 10, 129; xi, p. 11; *id. Cat.* no. 41; *Sharpe, Cat. B. M.* p. 452; *Legge, S. F.* iii, p. 362; *id. Birds Ceyl.* p. 72; *Armstrong, S. F.* iv, p. 298; *Hume & Dav. S. F.* vi, p. 16; *Ball, S. F.* vii, p. 199; *Cripps, S. F.* vii, p. 248; xi. p. 11, note; *Gurney, Ibis,* 1878, p. 456; *Bingham, S. F.* viii, p. 191; ix, p. 144; *Reid, S. F.* x, p. 8; *Oates, B. B.* p. 221; *Barnes, Birds Bom.* p. 39; *Parker, Ibis,* 1886, p. 183; *Oates in Hume's N. & E.* 2nd ed. iii, p. 167.

The White-tailed Sea-Eagle, Jerdon; *Madhuya*, H.; *Machmoral*, Beng.; *Rajaliya*, Cing.

Coloration. Head and neck all round ashy grey, with more or less distinct whitish shaft-stripes, crown of head and nape brownish; back and wings, rump, upper tail-coverts, and terminal 2 to 3 inches of tail dark brown, the upper back a little paler; breast rather lighter brown than back, abdomen and basal two-thirds of all tail-feathers white.

Young birds are light brown, with pale edges to the feathers, those of the head, neck, upper back, and lower parts with whitish shaft-stripes; the quills are barred, and the basal portion of the tail mottled brown and white.

Bill dark brown, basal two-thirds of lower mandible bright plumbeous; cere and iris brown; legs and feet china white; claws black (*Oates*). Iris clear yellow, sometimes tinged with reddish and mottled with brown (*Legge*).

Length about 29; tail 11; wing 19; tarsus 3·7; bill from gape 2: males rather less. Ceylon and Malacca birds are rather smaller than those from Northern India and Burma.

Distribution. Throughout the greater part of the Peninsula of India, in suitable localities, from the base of the Himalayas, but not west of Delhi, nor in Sind, and rare to the southward. This species occurs also in Ceylon, throughout Burma, and in the Malay Peninsula and Islands as far as Java, Celebes, and the Philippines.

Habits, &c. This Fishing-Eagle haunts wooded rivers, large lakes, and backwaters, but is seldom found on the sea-coast. It has a peculiar deep resounding call, repeated three or four times. It lives chiefly on fish, which it swoops upon in its flight, not pouncing down on them like an Osprey, but it will, Jerdon says, occasionally carry off a wounded bird. Legge says that it seldom soars or takes long flights; it is commonly seen perched on a tree near water. It breeds from December to March, builds an immense nest of sticks, and lays two or three greyish-white eggs, measuring about 2·68 by 2·09.

1227. **Polioaëtus humilis.** *Hodgson's Fishing-Eagle.*

Haliaëtus plumbeus, *Hodgs. J. A. S. B.* vi, p. 367 (1837), descr. nullâ.
Falco humilis, *Müller & Schleg. Verhandl., Aves*, p. 47, pl. 6 (1839–44).
Ichthyaëtus nanus, *Blyth, J. A. S. B.* xi, p. 202 (1842); xii, p. 304.
Pontoaëtus nanus, *Blyth, Cat.* p. 30.
Pandion humilis, *Horsf. & M. Cat.* i, p. 54.
Polioaëtus plumbeus, *Jerdon, Ibis*, 1871, p. 336; *Hume, N. & E.* p. 43; *A. Anderson, S. F.* iii, p. 385; *id. P. Z. S.* 1876, p. 777, pl. lxxxii; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 192; *Brooks, S. F.* iv, p. 272; *Hume, S. F.* v, pp. 11, 129; *id. Cat.* no. 41 bis; *Gurney, Ibis*, 1878, p. 456; *Reid, S. F.* x, p. 9; *Cripps, S. F.* xi, p. 12; *Oates in Hume's N. & E.* 2nd ed. iii, p. 169; *Sharpe, Yarkand Miss., Aves*, p. 8.
Polioaëtus humilis, *Brooks, J. A. S. B.* xli, pt. 2, p. 73; *Sharpe, Cat. B. M.* i, p. 454; *Hume, S. F.* v, p. 130; ix, p. 244; xi, p. 11; *id. Cat.* no. 41 ter; *Oates, B. B.* ii, p. 223.
Haliaëtus humilis, *Hume & Dav. S. F.* vi, p. 17.

Coloration. Head and neck all round ashy, browner on the crown and nape; remainder of upper parts dark brown, the quills blackish; the middle tail-feathers brown throughout, generally darker on the last third and with pale tips; of the other tail-feathers the basal two-thirds are mottled brown and white, especially on the inner webs, and lighter beneath; breast ashy brown, more ashy in older birds; the feathers of the head, neck, upper back, and breast more or less distinctly dark-shafted; abdomen and lower tail-coverts white.

Young birds are paler brown; they want the grey on the head, and the breast-feathers have white shafts and ends.

Upper mandible blue-black; cere, gape, and lower mandible leaden blue; irides bright yellow; legs and feet white, washed with leaden blue; claws black (*A. Anderson*).

Length of a Himalayan female 24·5; tail 9·2; wing 17·5; tarsus 3·1; bill from gape 1·7. Males very little smaller. Specimens from Assam and Cachar have generally a wing of 16 to 17 inches; Malay birds are much smaller.

Distribution. Along the base of the Himalayas from Kashmir to Assam, ranging into the plains as far as Delhi and Etáwah in winter; in Assam and Cachar, probably throughout Burma, but rare there; in the Malay Peninsula, Sumatra, Borneo, and Celebes.

The Himalayan race, the wing of which sometimes measures 19 inches, but generally 17 to 18, has been distinguished as *P. plumbeus* from the Malay race *P. humilis*, with a wing from 13·5 to 15·5; but there is no difference except size, and Cachar birds have intermediate dimensions.

Habits, &c. Similar to those of *P. ichthyaëtus.* The nest is a huge structure of sticks in a high tree; the eggs, two or three in number, are white and unspotted, measuring about 2·75 by 2·12. The birds breed in the Himalayas between January and May.

Genus **HALIASTUR**, Selby, 1840.

Bill rather large, compressed, slightly curved towards the base, but sharply bent over near the tip; festoon distinct; nostril a broad rounded oval, the longer axis oblique. Wings very long, extending beyond the end of the tail, 4th primary longest; tail of moderate length, slightly rounded at the end. Tarsi short, feathered above, the naked portion with broad transverse scutes in front, and hexagonal scales behind and at the sides; toes covered with transverse scutes above, rough and pointed scales beneath, lateral toes unequal; claws well developed and curved.

The well-known Brahminy Kite is the sole Indian representative and the type of this genus, which inhabits the Oriental and Australian regions. *Haliastur* has been classed alternately with the Sea-Eagles and with the Kites, and is allied to both.

1228. **Haliastur indus.** *The Brahminy Kite.* (Fig. 79, p. 312.)

Falco indus, *Bodd. Tabl. Pl. Enl.* p. 25 (1783).

Falco pondicerianus, *Gm. Syst. Nat.* i, p. 265 (1788).

Haliastur indus, *Blyth, Cat.* p. 31; *Horsf. & M. Cat.* i, p. 57; *Jerdon, B. I.* i, p. 101; *Hume, Rough Notes,* p. 316; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 16; xli, pt. 2, p. 230; *King, J. A. S. B.* xxxvii, pt. 2, pp. 210, 213; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 93; *Hume, N. & E.* p. 51; *id. S. F.* i, p. 160; *Rainey, ibid.* p. 496; *A. Anderson, P. Z. S.* 1872, p. 79; *Hayes Lloyd, Ibis,* 1873, p. 405; *Sharpe, Cat. B. M.* i, p. 313; *Butler, S. F.* iii, p. 448; ix, p. 374; *Fairbank, S. F.* v, p. 392; *Hume & Dav. S. F.* vi, p. 22; *Davidson & Wend. S. F.* vii, p. 75; *Ball, ibid.* p. 200; *Cripps, ibid.* p. 251; *Gurney, Ibis,* 1878, p. 460; *Hume, Cat.* no. 55; *Scully, S. F.* viii, p. 227; *Legge, Birds Ceyl.* p. 76; *Vidal, S. F.* ix, p. 34; *Bingham, ibid.* p. 145; *Reid, S. F.* x, p. 12; *Davison, ibid.* p. 340; *Oates, B. B.* ii, p. 201; *Murray, Vert. Zool. Sind,* p. 90; *Barnes, Birds Bom.* p. 54; *Hume, S. F.* xi, p. 15; *Oates, in Hume's N. & E.* 2nd ed. iii, p. 170.

The Maroon-backed Kite, Jerdon; *Brahmani Chil, Sankar Chil, Dhobia-Chīl, Ru-mubárik,* H.; *Khemankari,* Sansc.; *Garuda,* Can.;

Garud-alawa, Garuda mantaru, Tel.; *Clem Prandu,* Tam (Ceylon); *Shemberrid,* Yerkli; *Pis Genda,* Gond.; *Zoon-koun-byoo,* Burm.

Coloration. Adult. Whole head, neck, and lower parts down to the middle of the abdomen white, each feather with a dark brown shaft-line; primaries black, except the basal portions of the inner webs, which, like the rest of the plumage above and below, are chestnut, paler and duller on the lower surface of the quills, greater under wing-coverts, and tail-feathers; the shafts of the body-feathers and upper and lower wing-coverts sometimes, not always, dark brown or black; end of tail whitish. There are sometimes indistinct narrow black cross-bars on the inner webs of some of the tail-feathers and secondary quills.

Young birds are brown above, the crown and hind-neck paler and with pale tawny shaft-stripes near the ends, and pale ends to the back-feathers and wing-coverts; ear-coverts dark brown; primaries black, secondaries and tail-feathers very dark brown; lower parts rufous-brown, throat and abdomen paler; breast-feathers with tawny shaft-stripes, abdomen and lower tail-coverts with black shafts.

In the next plumage, assumed in autumn apparently without any complete moult, the head, neck, and breast are pale brown, tinted rufous and black-shafted; the rest of the upper plumage brown, mixed with some white on the wing-coverts and secondary quills; lower abdomen dull rufous. From this plumage the birds moult into the adult dress in winter.

Bill bluish horn; cere yellowish; iris brown; legs and feet greenish yellow (*Legge*).

Length of female about 19; tail 8·5; wing 15; tarsus 2; mid-toe without claw 1·5; bill from gape 1·4. Males very little less.

Distribution. Throughout India, Ceylon, and Burma, common on the sea-coast, and near rivers, marshes, and large tanks, rare in the drier parts of the country and in hill forest. This bird does not range further to the westward; eastward it is found in China, Cochin-China, Siam, and the Malay Peninsula; and closely allied forms or subspecies known as *H. intermedius* and *H. gerrenera* with the dark stripes very narrow in the first and wanting in the second, are found throughout the Malay Archipelago and Northern Australia.

Habits, &c. The Brahminy Kite shows considerable resemblance to the Common Kite in its flight and habits, especially in seizing its food in its claws during a swoop, but it is rarely seen away from water. It abounds in Calcutta and many other ports, perching on the rigging of ships and feeding on refuse thrown overboard. It also picks small fish off the surface of the water with its claws, and captures frogs or crabs in paddy-fields and marshes. At other times it feeds on insects, or robs Crows or Kites. Small birds are seldom assailed by it unless sickly or weak, but Mr. Rainey saw a Brahminy Kite kill and eat a King-fisher (*Alcedo ispida*) that had carried off a small fish on which the Kite was in the act of stooping. The cry is Kite-like, a peculiar squealing sound, uttered on the wing. The breeding-season is from December to February to the southward, later in Northern India, and two eggs, or occasionally three, are laid in a stick-nest placed on a tree and sometimes lined with leaves or other material. The eggs are greyish white, unspotted or scantily speckled or blotched with reddish brown, and measure about 2·02 by 1·65.

The name of Brahminy Kite is due to the association of this bird with Vishnu.

Genus **MILVUS**, Cuvier, 1800.

The true Kites belong to the present genus, and are all birds of moderate size, with a long forked tail. The bill is rather weak, the culmen straight at the base, then curved, the festoon generally small, the cere well developed, and the nostril oval and oblique. Wings long and pointed, but not extending quite to the end of the tail; 3rd and 4th quills longest. Tarsus short, feathered for about half its length, the naked lower portion with broad shields in front, reticulated behind and at the sides; toes short, scutellate above, lateral toes uneven; claws moderate, middle claw dilated on the inside.

Five or six species are known, inhabiting Europe, Africa, Asia, and Australia: one of these is amongst the commonest of Indian birds, a second has a wide range in India, but is rare, whilst the third just comes within the empire to the westward.

Key to the Species.

a. Head tawny or rufous with black streaks in adults.
  a'. Wing ♂ 16·75 to 18·5 inches; ♀ 17 to 19·5 .... *M. govinda*, p. 374.
  b'. Wing ♂ 19–20·5; ♀ 19·25–21·5........ *M. melanotis*, p. 377.
b. Head whitish with black streaks in adults .. *M. migrans*, p. 378.

1229. **Milvus govinda.** *The Common Pariah Kite.*

Milvus govinda, *Sykes, P. Z. S.* 1832, p. 81; *Layard, A. M. N. H.* (2) xii, p. 103; *Horsf. & M. Cat.* i, p. 30; *Jerdon, B. I.* i, p. 104; *Blyth, Ibis,* 1866, p. 248; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 16; xli, pt. 2, p. 231; *Hume, Rough Notes,* p. 320; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 93; *Blanf. J. A. S. B.* xli, pt. 2, p. 43; *A. Anderson, P. Z. S.* 1872, p. 79; *Hume, S. F.* i, p. 160; ii, p. 150; iv, pp. 282, 462; *Sharpe, Cat. B. M.* i, p. 325; *Blyth, Birds Burm.* p. 64; *Brooks, S. F.* iii, p. 275; iv, p. 272; *id. Ibis,* 1885, p. 385; *Butler, S. F.* iii, p. 448; ix, p. 374; *Wardl. Rams. Ibis,* 1877, p. 454; *Oates, S. F.* vii, p. 44; *Ball, S. F.* vii, p. 200; *Hume, Cat.* no. 56; *Gurney, Ibis,* 1879, p. 76; *Bingham, S. F.* viii, p. 191; *Scully, ibid.* p. 227; *id. Ibis,* 1881, p. 422; *Legge, Birds Ceyl.* p. 80; *Vidal, S. F.* ix, p. 34; *Davison, S. F.* x, p. 340; *Barnes, Birds Bom.* p. 54; *id. Jour. Bom. N. H. Soc.* i, p. 41; *St. John, Ibis,* 1889, p. 153; *Oates in Hume's N. & E.* 2nd ed. iii, p. 173.

Milvus cheela, *apud Jerdon, Madr. Jour. L. S.* x, p. 71 (1839); *nec* Falco cheela, *Lath.*
Milvus ater, *apud Blyth, Cat.* p. 31; *nec* Falco ater, *Gm.*
Milvus affinis, *Gould, P. Z. S.* 1837, p. 140; *Jerdon, Ibis,* 1871, p. 343; *Hume, S. F.* i, p. 161; iii, pp. 35, 229; vii, p. 200; xi, p. 15; *id. Cat.* no. 56 ter; *Sharpe, Cat. B. M.* i, p. 323; *Armstrong, S. F.* iv, p. 299; *Hume & Dav. S. F.* vi, p. 23; *Brooks, S. F.* viii, p. 466; *Bingham, S. F.* ix, p. 145; *Oates, S. F.* x, p. 181; *id. B. B.* ii, p. 202; *id. in Hume's N. & E.* 2nd ed. iii, p. 176.
Milvus palustris, *Anderson, P. A. S. B.* 1873, p. 143; *id. P. Z. S.* 1875, p. 25.

Chil, H.; *Il*, at Chamba; *Malla gedda*, Tel.; *Paria prandu*, *Kalu prandu*, Tam.; *Genda*, Mhári; *Rajaliya*, Cing.; *Zoon*, Burm.

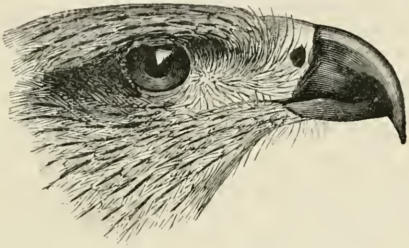

Fig. 93.—Head of *M. govinda*, ¾.

Coloration. Adult. Above brown, median wing-coverts lighter and dark-shafted, the crown and hind-neck paler, tawny or rufous, not whitish, with blackish shaft-stripes; a patch behind the eye, including the ear-coverts, uniform dark brown; first five primaries and larger primary-coverts blackish, later primaries and secondaries coloured like back; all the quills more or less mottled with whitish on the inner webs towards the base, and banded with blackish-brown cross-bars; tail brown above, whity brown below, with numerous darker cross-bands, faint and obsolete in some (probably old) birds; lower parts rather paler than upper, whitish at the chin, and generally, but not always, becoming tinged with rufous on the abdomen and lower tail-coverts, and always dark-shafted throughout, with pale or rufous stripes on each side of the dark shaft-lines; lower wing-coverts like breast, except the larger coverts, which are ashy brown with pale bands.

Young birds have broad buff or white shaft-stripes to the feathers of the head (except the ear-coverts), neck, and lower surface, and buff or whitish tips to the feathers of the back, wing-coverts, scapulars, secondaries, and tail-feathers.

Bill black; cere and gape yellow in old birds, greenish grey in the young; irides brown; legs and feet yellow, pale greenish grey in young birds; claws black (*Hume*).

Length of females about 24; tail 12; wing 18·5; tarsus 2·1; mid-toe without claw 1·6; bill from gape 1·7: males are smaller—length about 12·5; wing 17·5. But birds from Southern India, Ceylon, and Burma run smaller (wing in females about 16·5 to 17·5), and those from Australia are smaller still.

It will be seen from the synonymy that I do not separate *M. affinis*, the Australian bird, found also in India, and distinguished by smaller size and by the absence of any white mottling at the base of the inner webs of the primaries. Every gradation may be found in India between birds with a large white patch beneath the wing (*M. palustris*, Anderson) and those without any white, and the latter, if of small size, are identical with Australian specimens. Burmese birds are, as a rule, darker than Indian, both above and below, but the character is not constant, and Australian birds resemble those of India, not those of Burma, in colour.

Distribution. Throughout India, Ceylon, and Burma, chiefly near human habitations, and throughout the Oriental region to Australia. On the Himalayas this Kite may be found to an elevation of about 12,000 feet, but is uncommon above about 8000.

Habits, &c. In this case, as with the other familiar birds of India, it is very difficult to improve upon Jerdon's admirable description of the habits. He writes: "It is one of the most abundant and common birds in India, found at all elevations up to 8000 feet at least, especially near large towns and cantonments, and its vast numbers and fearlessness are among the first objects that strike the stranger from England, where birds of prey are so rare. Every large town, cantonment, and even village has its colony of Kites, which ply their busy vocation from before sunrise to some time after sunset. Every large camp, too, is followed by these useful scavengers, and the tent even of the single traveller is daily visited by one or more, according to the numbers in the neighbourhood. As is well known, Kites pick up garbage of all kinds, fragments of meat and fish, and generally the refuse of man's food. When a basket of refuse or offal is thrown out in the streets to be carted away, the Kites of the immediate neighbourhood, who appear to be quite cognizant of the usual time at which this is done, are all on the look-out, and dash down on it impetuously, some of them seizing the most tempting morsels by a rapid swoop, others deliberately sitting down on the heaps along with crows and dogs, and selecting their scraps. On such an occasion, too, there is many a struggle to retain a larger fragment than usual, for the possessor no sooner emerges from its swoop than several empty-clawed spectators instantly pursue it eagerly, till the owner finds the chase too hot, and drops the bone of contention, which is generally picked up long before it reaches the ground, again and again to change owners, and perhaps finally revert to its original proprietor. On such occasions there is a considerable amount of squealing going on.

"The vast numbers of these Kites in large towns can hardly be realized by strangers. They are excessively bold and fearless, often snatching morsels off a dish *en route* from kitchen to hall. At our seaports many Kites find their daily sustenance among the shipping, perching freely on the rigging, and in company with the Brahminy Kite, which rarely enters towns, snatching scraps of refuse from the surface of the waters. The food of the Kite is usually devoured on the wing, or, if too large, carried to the nearest house or tree.

"The flight of the Indian Kite is bold, easy, and graceful when once mounted aloft, though somewhat heavy on first taking wing, and it soars slowly about, in greater or less numbers, in large circles.

"Mr. Blyth notices their collecting in numbers without any apparent object, especially towards evening. This I have frequently observed at all large stations, where the whole Kites of the neighbourhood, before retiring to roost, appear to hold conclave. They are said to leave Calcutta almost entirely for three or four months during the rains" [this is perfectly correct]. "I have not noticed this at other places. As remarked by Buchanan Hamilton, they may often be seen seated on the entablatures of buildings, with their breast to the wall and wings spread out, exactly as represented in Egyptian monuments."

In various parts of India Kites have been found breeding by Mr. B. Aitken and others at all times of the year, but the principal breeding-season is from January to March or April. The pairing is accompanied by much squealing, and the common Indian name, "Chīl" or "Cheel," is derived from the bird's cry. The nest, a clumsy mass of sticks and twigs, mixed or lined with rags, grass, &c., is generally on a tree, more rarely on a building. The eggs are generally 2, sometimes 3 or 4, in number, pale greenish white, variously spotted or blotched with brown or red and measure about 2·19 by 1·77.

1230. **Milvus melanotis.** *The Large Indian Kite.*

Milvus melanotis, *Temm. & Schleg. Faun. Jap., Aves*, p. 14, pls. v, v *b* (1845–50); *Hume, J. A. S. B.* xxxix, pt. 2, p. 114; *Blanf. J. A. S. B.* xli, pt. 2, p. 153; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 152; *Sharpe, Cat. B. M.* i, p. 324; *A. Anderson, S. F.* iii, p. 387; *Ball, S. F.* v, p. 412; vii, p. 200; *Anders. Yunnan Exped., Aves*, p. 574; *Hume, Cat.* no. 56 bis; *Scully, S. F.* viii, p. 228; *Gurney, Ibis*, 1879, p. 80; *Butler, S. F.* ix, p. 375; *Scully, Ibis*, 1881, p. 422; *Oates, B. B.* ii, p. 203; *id. in Hume's N. & E.* 2nd ed. iii, p. 176; *Barnes, Birds Bom.* p. 57; *Hume, S. F.* xi, p. 15; *Sharpe, Yarkand Miss., Aves*, p. 8.

Milvus, sp., *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 167.

Milvus major, *Hume, Rough Notes*, p. 326 (1870); *id. Ibis*, 1870, p. 439; *Jerdon, Ibis*, 1871, p. 342; *A. Anderson, P. Z. S.* 1872, p. 79; 1875, p. 25; *Hume, N. & E.* p. 54; *id. S. F.* i, p. 160; iii, pp. 35, 229, 448; iv, p. 414; *Fairbank, S. F.* iv, p. 253.

Milvus govinda, *apud Brooks, S. F.* iii, pp. 229, 275; iv, p. 272: viii, p. 466; *id. Ibis*, 1884, p. 238; 1885, p. 386; *Biddulph & G. F. L. Marshall, Ibis*, 1881, p. 44.

This Kite is chiefly distinguished from *M. govinda* by larger size, the coloration being almost identical; but the present species may generally be recognized by the amount of white on the inner webs of the quills near the base, forming a conspicuous white patch below the wing, as in Buzzards. As a rule, too, the lower abdomen and under tail-coverts are much paler in *M. melanotis* than in *M. govinda*. Some birds, however, appear almost to form a passage between the two.

Bill bluish; cere yellowish white; irides hazel-brown; legs dull china white; claws blackish (*Oates*).

Length of male about 25; tail 13; wing 19 to 20·5; tarsus 2·2; mid-toe without claw 1·6; bill from gape 1·75: females are larger —length 27; wings 19·25 to 21·5; tail 13·5.

Distribution. A migratory bird in India, appearing in the Peninsula as far south as Bombay and the Godávari valley, and in Burma as far as Rangoon, in the cold season. I obtained one near Badrachellam on the Godávari as late as April. This Kite is found in the Himalayas and throughout Eastern and Central Asia, ranging as far north as Japan and Southern Siberia in summer.

Habits, &c. Generally a shyer bird, keeping more to jungles and marshes, than the common Indian Kite, though I have seen and killed the large kind from my tent-door, and I shot another sitting on a tree in a small village. The flight is heavier, but otherwise the habits are similar. *M. melanotis* breeds in the Himalayas from January to May—the nest and eggs being precisely similar to those of *M. govinda*, except that the eggs are slightly larger, averaging about 2·31 by 1·8.

1231. **Milvus migrans.** *The Black Kite.*

Falco migrans, *Bodd. Tabl. Pl. Enl.* p. 28 (1783).
Falco ater, *Gmel. Syst. Nat.* i, p. 262 (1788).
Milvus migrans, *Strickl. Orn. Syn.* p. 133; *Blanf. East. Pers.* ii, p. 114; *Hume, S. F.* vii, p. 344; *id. Cat.* no. 56 quat.; *Barnes, S. F.* ix, pp. 215, 452; *C. Swinhoe, Ibis,* 1882, p. 100; *St. John, Ibis,* 1889, p. 153.

This is distinguished from *M. govinda* by having the edges of the feathers on the crown and nape whitish instead of light brown or rufous, and by the more distinctly ferruginous colour of the abdomen. As a rule, too, there is in the present form little or no mottling or banding on the basal portion of the quills in adults.

Length of female about 23; tail 11; wing 17; tarsus 2·1; bill from gape 1·65. Males are rather smaller.

Distribution. Africa, Southern Europe, and South-western Asia. The Black Kite only comes within our area, so far as is known, in Southern Afghanistan around Quetta. Capt. Barnes found it breeding about the Khojak, between Quetta and Kandahar, in March and April.

Habits, &c. Similar to those of *M. govinda*, and this bird haunts towns in the Levant as *M. govinda* does in India. Similarly in former times *M. ictinus* acted as scavenger in London and other European cities.

Genus **ELANUS**, Savigny, 1810.

Bill small, wide at the base, compressed towards the end; culmen curved sharply from the cere; festoon distinct; nostrils oval, nearly horizontal, protected by long loral bristles. Wings long and pointed, exceeding the tail when closed; 2nd quill longest; tail moderately long, square at the end. Tarsi short and stout, feathered in front for more than half their length; naked parts reticulated throughout. Toes strong, reticulated above, except close to the claws, lateral toes subequal in length; middle claw keeled, the others rounded beneath.

This is a genus of small birds allied to the Kites and comprising five species, distributed throughout the tropics and subtropical countries of the world. One species is Indian.

1232. **Elanus cæruleus.** *The Black-winged Kite.*

Falco cæruleus, *Desf. Mém. Acad. Sc.* 1787, p. 503, pl. 15.
Falco melanopterus, *Daud. Traité*, ii, p. 152 (1800).
Elanus melanopterus, *Jerdon, Madr. Jour. L. S.* x, p. 71; *Blyth, Cat.* p. 18; *Horsf. & M. Cat.* i, p. 28; *Jerdon, B. I.* i, p. 112; *Hume, Rough Notes*, p. 338; *id. S. F.* i, pp. 21, 163; *id. N. & E.* p. 56; *A. Anderson, P. Z. S.* 1872, p. 80; *Adam, S. F.* i, p. 369; *Butler, S. F.* iii, p. 449; *Blyth & Wald, Birds Burm.* p. 60; *Hume, S. F.* iv, p. 462; *Inglis, S. F.* v, p. 16.
Elanus cæruleus, *Strickland, Orn. Syn.* p. 137; *Sharpe, Cat. B. M.* i, p. 336; *Hume & Dav. S. F.* vi, p. 26; *Ball, S. F.* vii, p. 200; *Cripps, ibid.* p. 252; *Hume, Cat.* no. 59; *Davidson, S. F.* viii, p. 415: x, p. 290; *Legge, Birds Ceyl.* p. 85; *Butler, S. F.* ix, p. 375; *Reid, S. F.* x, p. 13; *Oates, B. B.* ii, p. 205; *id. in Hume's N. & E.* 2nd ed. iii, p. 177; *Hume, S. F.* xi, p. 17; *Barnes, Birds Bom.* p. 59; *id. Jour. Bom. N. H. Soc.* iii, p. 219; *St. John, Ibis*, 1889, p. 154.

Kapassi, H.; *Masunwa*, in Oude; *Chanwa*, Nepal.; *Adavi Ramadasu*, Tel.; *Argellur*, Yerkli; *Ukussa*, Cing.

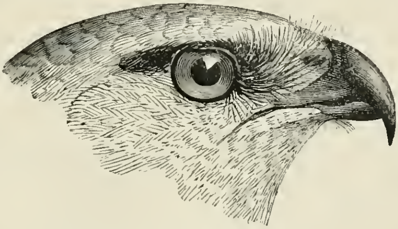

Fig. 94.—Head of *E. cæruleus*, $\frac{1}{1}$.

Coloration. Adult. Forehead, anterior lores, a streak over the eye, sides of the head, the whole of the lower parts, and all tail-feathers, except the middle pair and the outer webs of the next two pairs, white; upper parts light ashy grey, the tail-feathers paler; median and smaller upper wing-coverts, a narrow supercilium, and the posterior lores black; primaries grey above, blackish beneath. In many specimens the fore-neck and flanks, and sometimes more of the lower parts, are pearly grey.

Young birds are brownish ashy above, with pale edges to the feathers; the quills and tail-feathers are tipped white; breast tinged or streaked with fulvous.

Bill black; cere and gape pale yellow; irides crimson in adults, yellow in the young; legs and feet deep yellow; claws black.

Length about 13; tail 5; wing 10·5; tarsus 1·3; mid-toe without claw 1; bill from gape 1·1.

Distribution. Throughout Africa, locally in Southern Europe and in South-western Asia, and in India, Ceylon, and Burma, but not, so far as is known, farther east, nor in Southern Tenasserim. Hume obtained specimens at the Laccadive Islands. In India, from the base of the Himalayas to the extreme South, in Ceylon, and in Arrakan and Pegu, this Kite is pretty generally distributed, but is not often abundant.

Habits, &c. Locally this is a migratory bird, wandering from one place to another with the seasons. It occurs most commonly in well-wooded cultivated districts and in thin jungle, avoiding both open plains and dense forests. It lives chiefly on insects and small mammals, and either watches for its prey from a perch or beats over grass or bushes, sometimes hovering like a Kestrel. It varies much in its time of breeding, eggs having been taken, at one place or another, at all seasons, and it appears sometimes to breed twice in the year. The nest, a loose structure of twigs, as a rule unlined, sometimes lined with grass, is placed on a tree, and contains 3 or 4 eggs, usually densely blotched with brownish red and measuring about 1·53 by 1·21.

Genus **CIRCUS**, Lacépède, 1801.

General form slender. Bill moderate or weak, compressed, the culmen curving from the margin of the cere to the hooked tip; the margin of the upper mandible slightly festooned; nostril large, oval, in the anterior part of the cere, overhung and partly concealed by the bristles of the lores. A ruff of small, soft, closely-set feathers, much more conspicuous in some species than in others, extends across the throat and up each side of the neck behind the ear-coverts. Wings long and pointed; tail long, even at the tip or rounded. Tarsi long and slender, feathered at the base only, with transverse shields in front and smaller polygonal scales behind; toes moderate; claws much curved and sharp.

The Harriers are a well-defined group of Hawks, easily recognized by their flight and appearance. All Indian species are migratory, and, with rare exceptions, cold-weather visitants, though one kind doubtless breeds in Northern India, and another may do so occasionally. They make nests on the ground or amongst reeds in marshes, and lay bluish-white eggs, generally unspotted, but occasionally with a few brownish-red spots.

Species of *Circus* are found in almost all tropical and temperate countries. Six are met with in India and Burma.

Key to the Species.

a. Outer web of 2nd, 3rd, and 4th quills, but not of 5th, notched.
  a′. Tarsus more than 2·5 long .... *C. macrurus*, p. 381.
  b′. Tarsus less than 2·5 long .... *C. cineraceus*, p. 383.
b. Outer web of 5th quill notched.
  c′. Straight from end of cere on culmen to tip of bill measures less than 0·75.
    a″. Upper parts ashy .... *C. cyaneus*, ♂ ad., p. 384.
    b″. Upper parts to rump black ...... *C. melanoleucus*, ♂ ad., [p. 385.
    c″. Upper parts brown, more or less edged with buff or rufous.
      a³. Upper tail-coverts pure white . . *C. cyaneus*, ♀ ad., p. 384.
      b³. Upper tail-coverts not entirely white.
        a⁴. Coverts along forearm white or buff .... *C. melanoleucus*, ♀ ad., [p. 385.
        b⁴. Coverts along forearm brown.
          a⁵. Abdomen buff, with darker shaft-stripes .... *C. cyaneus*, young, p. 384.
          b⁵. Abdomen rufous-brown . . *C. melanoleucus*, young, [p. 385.
  d′. From cere on culmen to tip of bill is more than 0·75.
    d″. Abdomen white unstriped or buff with dark shaft-stripes .... *C. spilonotus*, p. 388.
    e″. Abdomen dark or rufous-brown, or rufous with dark stripes .... *C. æruginosus*, p. 387.

1233. **Circus macrurus.** *The Pale Harrier.*

Accipiter macrourus, *S. G. Gmel. N. Comm. Petrop.* xv, p. 439, pls. viii, ix (1771).
Circus swainsoni, *Smith, S. Afr. Quart. Jour.* i, p. 384 (1830); *Blyth, Cat.* p. 20; *Horsf. & M. Cat.* i, p. 25; *Jerdon, B. I.* i, p. 96; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 265; *Hume, Rough Notes,* p. 298; *id. S. F.* i, p. 408; *Blyth, Birds Burm.* p. 61; *Butler, S. F.* iii, p. 447; v, p. 226; *Hume & Bourd. S. F.* iv, p. 372: *A. Anderson, P. Z. S.* 1872, p. 78; 1876, p. 314.
Circus pallidus, *Sykes, P. Z. S.* 1832, p. 80; *Hume, S. F.* i, p. 160.
Falco herbæcola, *Tickell, J. A. S. B.* ii, p. 570 (1833); *Walden, Ibis,* 1876, p. 342.
Circus macrurus, *Sharpe, Cat. B. M.* i, p. 67; *Ball, S. F.* vii, p. 199; *Cripps, ibid.* p. 249; *Scully, S. F.* viii. p. 226; *Hume, Cat.* no. 51: *Legge, Birds Ceyl.* p. 17; *Vidal, S. F.* ix, p. 33; *Biddulph, Ibis,* 1881, p. 43; *Scully, ibid.* p. 421; *Reid, S. F.* x, p. 10; *Davison, ibid.* p. 338; *Oates, B. B.* ii, p. 175; *Hume, S. F.* xi, p. 13; *Barnes, Birds Bom.* p. 45.

Dastmal, Girgit Mor, Pattai, H.; *Pandouvi,* Beng.; *Tella chappa gedda, Pilli gedda,* Tel.; *Puna prandu,* Tam.; *Kurrulu-goya, Ukussa,* Cing.

Coloration. Adult male. Upper parts pale ashy grey, generally, except in very old birds, more or less tinged with brown on the crown, back, scapulars, and quills; lores whitish; forehead and above and beneath the eye white; ear-coverts pale grey streaked with white; the ruff behind the ear-coverts differing in texture, but scarcely in colour; primaries ashy grey, 3rd, 4th, and 5th black or blackish brown on part of the terminal half, some black on the 2nd and 6th, the basal portion of all quills white; upper tail-coverts banded grey and white, middle tail-feathers grey unbarred, the others white with grey bars; lower parts white, throat and upper breast with a faint grey tinge.

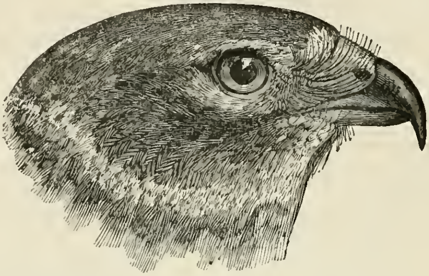

Fig. 95.—Head of *C. macrurus*, ♀, ¾.

Adult female. Above brown, feathers of head and hind-neck broadly margined with rufous or buff, and the smaller wing-coverts with broad pale rufous borders; forehead whitish, a buffy white supercilium and patch below the eye; moustachial stripe and ear-coverts brown; a well-marked ruff of small white or buff feathers with broad brown shaft-stripes all round the neck, behind the ear-coverts, and across the throat; quills brown above, buff or whitish below, with blackish-brown cross-bands on both sides; upper tail-coverts white, with brown shaft-stripes or other markings; middle tail-feathers brown, outer feathers buff or rufous-white, all with dark-brown cross-bands. Lower parts white, with rufous-brown shaft-stripes, broadest on the breast; in old birds these stripes become very narrow, especially on the abdomen and lower tail-coverts.

Young birds resemble the female above, except that the feathers have, at first, rufous edges throughout, there is a white nuchal patch with brown shaft-stripes, and the ruff is unstreaked or almost unstreaked buff and very conspicuous; the upper tail-coverts are white, the lower parts throughout are rufous-buff with faint shaft-stripes. There is a gradual passage from this plumage into that of the adult; nearly adult males are often found with patches of brown on the crown and brown shaft-stripes on the breast.

Bill black; cere greenish; iris yellow in adults, brown in the young; legs yellow.

Length of females about 19·5 inches; tail 10; wing 14·5; tarsus 2·9: length of males 18; tail 8·75; wing 13·75; tarsus 2·7.

Distribution. A migratory bird, found throughout the greater part of India, Ceylon, and Burma in suitable localities from September till April, and ranging over Eastern Europe, nearly all Asia and Africa. It has not been observed in Tenasserim nor further south, and it is very rarely seen amongst hills or in forests, but is common on stony plains, grassy or bushy undulating tracts, and on cultivated ground; it is also found near water.

Habits, &c. This and the next three species are usually seen flying slowly over the ground just above the surface, now and then dropping noiselessly on their prey, which consists of lizards and insects, and occasionally of mice and young or sickly birds. Harriers usually sit on the ground, rarely on trees; and Jerdon notices that they are sometimes surprised and killed at night by foxes and jackals. This Harrier does not breed in India.

1234. **Circus cineraceus.** *Montagu's Harrier.*

Falco cineraceus, *Montagu, Orn. Dict.* i, sheet K 2 (1802).
Falco cinerareus, *Montagu, Trans. Linn. Soc.* ix, p. 188 (1808).
Circus cinerascens, *Steph. Gen. Zool.* xiii, pt. 2, p. 41 (1826); *Blyth, Cat.* p. 20; *Layard, A. M. N. H.* (2) xii, p. 105; *Horsf. & M. Cat.* i, p. 27.
Circus cineraceus, *Jerdon, B. I.* i, p. 97; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 16; *Hume, Rough Notes,* p. 303; *Blyth, Birds Burm.* p. 61; *Wardl. Ramsay, Ibis,* 1875, p. 351; *A. Anderson, P. Z. S.* 1876, p. 314; *Ball, S. F.* vii, p. 199; *Cripps, ibid.* p. 249; *Doig, ibid.* p. 503; *Hume, Cat.* no. 52; *Legge, Birds Ceyl.* p. 12; *Biddulph, Ibis,* 1881, p. 43; *Scully, ibid.* p. 421; *Cripps, S. F.* xi, p. 13; *Barnes, Birds Bom.* p. 49.
Circus pygargus, *apud Sharpe, Cat. B. M.* i, p. 64; *Oates, B. B.* ii, p. 173; *nec* Falco pygargus, *L.*

Dastmal, Girgit Mor, Pattai, H.; *Pandouvi,* Beng.; *Tella chappa gedda, Pilli gedda,* Tel.; *Puna prandu,* Tam.; *Kurula-goya, Ukussa,* Cing.

Coloration. Adult male. Upper plumage, sides of head and neck, chin, throat, and breast ashy grey, much darker than in *C. macrurus,* and more or less tinged, except in very old birds, with brown on the back, scapulars, and tertiaries; upper tail-coverts white, barred or shaded with ashy; first 5 or 6 primaries black, the tips grey, and the amount of grey gradually increasing on the inner feathers; secondaries grey above, with a blackish transverse band, beneath white, with grey tips; middle tail-feathers grey, outer white, with transverse rufous and grey bars; lower parts from breast white, with chestnut shaft-stripes; axillaries white, with chestnut bars and drops.

Females resemble those of *C. macrurus,* but the ruff is very indistinct, the upper parts are rather darker, and the edges of the head- and neck-feathers and of the wing-coverts more rufous; the general colour of the lower parts is buff or dull rufous, with rufous-brown shaft-stripes.

The young of *C. cineraceus* are distinguished by the ruff being indistinct and streaked throughout in place of the conspicuous buff ruff of *C. macrurus*; the lower surface, too, is darker and more distinctly streaked. At all ages *C. cineraceus* may be recognized by its short tarsus, and by the notch or emargination on the outer web of the second primary being about an inch beyond the ends of the greater coverts, whilst in *C. macrurus* the notch is close to them.

Bill black; cere greenish yellow; iris yellow, brownish yellow in the female; legs and feet yellow.

Length of females about 19; tail 9·25; wing 15·5; tarsus 2·4: length of males about 17; tail 9; wing 15; tarsus 2·3.

Distribution. The greater part of Europe, Asia, and Africa. Montagu's Harrier is migratory, and is found locally throughout India and Ceylon from October to April. It occurs in Assam, but is very rare in Burma, though it is said to be found there. It is not known in Tenasserim, but has been doubtfully recorded from the Malay Peninsula (Ibis, 1881, p. 368).

Habits, &c. Very similar to those of *C. macrurus*, but this bird is more local and avoids the dry stony plains and scrub-jungle more than the Pale Harrier does.

1235. **Circus cyaneus.** *The Hen-Harrier.*

Falco cyaneus, *Linn. Syst. Nat.* i, p. 126 (1766).

Circus cyaneus, *Blyth, Cat.* p. 20; *Jerdon, B. I.* i, p. 95; *King, J. A. S. B.* xxxvii, pt. 2, p. 213; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 166; *Hume, Rough Notes*, p. 293; *id. J. A. S. B.* xxxix, pt. 2, p. 114; *Jerdon, Ibis*, 1871, p. 341; *Sharpe, Cat. B. M.* i. p. 52; *Hume, Cat.* no. 50; *Scully, S. F.* viii, p. 226; *Biddulph, Ibis*, 1881, p. 42; *Scully, ibid.* p. 421.

Coloration. Adult male. Similar to that of *C. macrurus*, except that the ashy grey of the upper plumage is somewhat darker and extends over the chin, throat, and upper breast, there is a distinct white nuchal patch with brown shaft-stripes, the terminal half of the first six primaries is black, and the upper tail-coverts are pure white.

The adult female is distinguished from that of *C. macrurus* by having the margins of the head- and neck-feathers more rufous, by the rufous markings on the wing-coverts and scapulars being larger and more in the form of spots, by the white around the eye being more sullied, and the moustachial stripe and ear-coverts being rufous with dark streaks instead of nearly uniform brown, and by the upper tail-coverts being pure white. The ruff is well marked.

Young birds have the lower parts buff or pale rufous, with distinct broad shaft-stripes, and the ruff, though distinct, is always striated.

At all ages this species is distinguished from *C. macrurus* and *C. cineraceus* by having the 5th primary notched on the outer web, and generally by having the 4th primary longest, and the 2nd shorter than the 5th.

Bill black; cere yellow; iris yellow, brown in the young, and according to some observers in females; legs and feet yellow.

Length of male about 18 inches; tail 9; wing 13; tarsus 2·75: length of female 21; tail 10·5; wing 15; tarsus 3.

Distribution. Europe, Northern and Central Asia, and Northern Africa. In India this species is fairly common in the Himalayas and in winter along their base, a few stragglers being found in Northern India as far south as the Central Provinces at that season.

Habits, &c. Very similar to those of the last two Harriers. This species is not known to breed in the Himalayas, but has been observed to do so at Tso Morari in Tibet.

1236. **Circus melanoleucus.** *The Pied Harrier.*

Falco melanoleucus, *Forster, Ind. Zool.* p. 12, pl. ii (1781).

Circus melanoleucus, *Blyth, Cat.* p. 21; *Horsf. & M. Cat.* i, p. 26; *Jerdon, B. I.* i, p. 98; iii, p. 870; *Blyth, Ibis,* 1866, p. 246; *King, J. A. S. B.* xxxvii, pt. 2, p. 213; *Blanf. J. A. S. B.* xxxviii, p. 167; *Hume, J. A. S. B.* xxxix, p. 114; *id. Rough Notes,* p. 307; *Godw.-Aust. J. A. S. B.* xxxix, p. 266; xlv, p. 67; *Jerdon, Ibis,* 1871, p. 341; *Sharpe, Cat. B. M.* i, p. 61; *Hume, S. F.* iii, p. 33; v, p. 11; vii, p. 34; xi, p. 13; *id. Cat.* no. 53; *Blyth & Wald. Birds Burm.* p. 61; *Gurney, Ibis,* 1875, p. 225; 1876, p. 130; *A. Anderson, P. Z. S.* 1876, p. 315; *Armstrong, S. F.* iv, p. 299; *Hume & Dav. S. F.* vi, pp. 21, 497; *Anderson, Yunnan Exped., Aves,* p. 572, pls. xlv, xlvi; *Ball, S. F.* vii, p. 199; *Cripps, S. F.* vii, p. 250; x, p. 327; xi, p. 13; *Bingham, S. F.* viii, p. 191; ix, p. 145; *Scully, S. F.* viii, p. 226; *Legge, Birds Ceyl.* p. 9; *Reid, S. F.* x, p. 11; *Davison, S. F.* x, p. 339; *Oates, B. B.* ii, p. 172; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, pp. 375, 428.

Pahatai, H.; *Ablak Petaha,* Nepal; *Thane-Kya,* Burmese.

Coloration. Adult male. Head and neck all round, breast, back, median upper wing-coverts, and a band from them to the bend of the wing, with the first six primaries, glossy black; a nuchal patch where the white bases of the feathers show; scapulars partly black, partly grey; smaller wing-coverts white, larger coverts, later primaries, and secondaries silver-grey, the latter tipped and bordered inside with white, tertiaries black; rump white; upper tail-coverts white, with broad lunate grey bands; tail grey, white at the tips and inner edges of the outer feathers; lower parts from the breast pure white.

Adult female. Above dark brown, the feathers of the crown and neck with rufous edges, those of the nape broadly bordered with white; a well-marked ruff of small white or buffy-white feathers with brown shaft-stripes; around eyes whitish; cheeks and ear-coverts dirty white or pale rufous with brown streaks; smaller coverts along the forearm white (in younger birds rufous) with blackish-brown shaft-stripes, median coverts brown with grey or white spots and bars, larger coverts dusky grey with a broad subterminal blackish band and another near the base; primaries outside blackish brown; secondaries grey, with blackish cross-bands, beneath all are greyish or whitish with dark bands; upper tail-coverts white, sometimes with rufous-brown drops or bands; tail grey, with dark brown cross-bands; lower parts white, with dark brown shaft-stripes, broad on the throat and breast, narrower and sometimes disappearing on the abdomen.

Young birds are more uniformly brown above than the adult female, and have no grey on the wings or tail, which are brown with darker bands; the ruff is ill-marked at the sides, but there is a large white brown-streaked nuchal patch and another patch of buff-edged brown feathers on the throat; the lower parts generally are rufous-brown, faintly streaked darker. The change from this plumage to that of the adult male appears to take place by moult.

For a long time it was supposed that both sexes in this bird were pied and similar, but the true facts were gradually traced out by Mr. Hume. Still one undoubted case is recorded by Mr. Cripps in which a female assumed the pied livery of the adult male, and other probable cases are indicated by the measurements of pied specimens.

Base of bill bluish, remainder black; cere dusky yellow; iris bright yellow; legs orange-yellow (*Oates*). Legs in female pale yellow (*Cripps*).

Length of male 17; tail 8·5; wing 13·75; tarsus 3: length of female 18·5; tail 9; wing 14·5; tarsus 3·2; bill from gape 1·2.

Distribuion. A winter visitor to the Eastern half of the Indian Peninsula and to Burma. Common in Bengal, Cachar, Assam, and Pegu, and along the base of the Himalayas as far west as Oude, also along the eastern coast of the Peninsula and for a considerable distance inland, and in Malabar: but rare in Ceylon, and in the N.W. Provinces of India, and, I believe, unknown in the Bombay Presidency *, the Central Provinces west of Jubbulpoor and Nagpur, and in North-western India generally. Beyond Indian limits this species is found throughout a large part of Eastern Asia, China, Japan, Amurland and Mongolia, Philippines, Siam, Cochin China, Malacca, &c.

Habits, &c. This is essentially a bird of the plains, and especially of swampy grass and of rice-fields, over which the conspicuous black and white plumage of the male bird makes it a familiar feature of the landscape. Its food consists chiefly of snakes, lizards, frogs, and insects, with birds and mice. Some Pied Harriers breed in Northern India; Jerdon noticed several in Purneah in July, and Cripps twice in April found an egg laid on an apology for a nest amongst "Ulu" grass (*Saccharum cylindricum*) close to the Brahmaputra in the Dibrugarh district of Upper Assam.

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* It is included in Barnes's 'Birds of Bombay,' but in this, as in several other cases, the author has been misled by Jerdon's statement that the species is found in Central India, by which Jerdon understood South-western Bengal or Chutia Nagpur. Jerdon also says that *C. melanoleucus* is rare in the Deccan, by which he may mean some part of the Hyderabad territory.

1237. **Circus æruginosus.** *The Marsh-Harrier.*

Falco æruginosus, *Linn. Syst. Nat.* i, p. 130 (1766).
Circus æruginosus, *Blyth, Cat.* p. 19; *Horsf. & M. Cat.* i, p. 27; *Jerdon, B. I.* i, p. 99; *Hume, Rough Notes,* p. 314; *id. S. F.* i, p. 160; ii, p. 150; xi, p. 14; *id. Cat.* n. 54; *Sharpe, Cat. B. M.* i, p. 69; *Gurney, Ibis,* 1875, p. 223; *Blyth & Wald. Birds Burm.* p. 61; *Butler, S. F.* iii, p. 447; v, p. 226; ix, p. 374; *Hume & Dav. S. F.* vi, p. 22; *Ball, S. F.* vii, p. 200; *Cripps, ibid.* p. 250; *Scully, S. F.* viii, p. 226; *Legge, Birds Ceyl.* p. 5; *Biddulph, Ibis,* 1881, p. 43; *Scully, ibid.* p. 422; *Vidal, S. F.* ix, p. 34; *Reid, S. F.* x, p. 11; *Oates, B. B.* p. 176; *id. in Hume's N. & E.* 2nd ed. iii, p. 117; *Barnes, Birds Bom.* p. 52.

Kutar, Kulesir, H.; *Mat-chil,* B.; *Safed Sira, Tika Bauri,* Mussalmans of Bengal; *Kuralagoya,* Cing.; *Prandu,* Tam. (Ceylon).

Coloration. Adult male. Head, neck, and breast buff or pale rufous, with dark brown shaft-stripes, broader on the breast; back and most of the wing-coverts dark brown; scapulars still darker, sometimes grey towards the base; smallest coverts along the forearm whitish, with dark brown shafts; outer greater coverts, primary-coverts, and all quills except first 6 primaries dark silvery grey, remaining coverts and very often the tertiaries dark brown; first 6 primaries black with the basal portion white; upper tail-coverts white, with rufous and brown mixed in various ways; tail grey above, isabelline below; abdomen and lower tail-coverts ferruginous brown, more or less striped darker.

Females are dark brown except the crown, nape, chin, and more or less of the throat, which are buff with brown stripes. There is sometimes a patch of buff on the breast, the wing-coverts and back have buff edges, and the upper tail-coverts are rufous.

The young of both sexes resemble the female, except that the buff on the head is sometimes unstreaked and more limited in extent, being confined in some cases to a nuchal patch or even wanting altogether.

Bill black; cere and base of bill greenish yellow; iris yellow, brownish yellow in females and young; legs and feet rich yellow (*Hume*).

Length of males 21; tail 9·5; wing 16; tarsus 3·4: length of females 22·5; tail 9·75; wing 16·5; tarsus 3·5.

Distribution. Common in suitable localities throughout India, Ceylon, and Burma from September or sometimes earlier, till April or May. Beyond Indian limits the Marsh-Harrier ranges over the greater part of Asia, Europe, and Africa.

Habits, &c. The Marsh-Harrier is commonly found about swampy plains or on the edges of large pieces of water, sometimes it may be met with hunting over dry grass plains. Though a more powerful bird its movements are very similar to those of the smaller Harriers, but it occasionally flies at considerable elevations like a Buzzard. It lives on frogs, fish, insects, small or weakly birds, and eggs, and often carries off wounded snipe or teal, or makes a meal off a wounded duck that is too heavy for it to carry away. This bird, though migratory as a rule, appears occasionally to breed in India: eggs believed to belong to this species were obtained by Mr. Rhodes Morgan in the Kurnool district, and other writers have noticed the bird in Northern India in the hot season and rains. Like other Harriers, it makes its nest of grass or straw on the ground or amongst reeds, and lays 4 or 5 eggs, which are either pure white or slightly spotted and measure about 2 by 1·5 inches.

1238. **Circus spilonotus.** *The Eastern Marsh-Harrier.*

Circus spilonotus, *Kaup in Jardine's Contr. Orn.* 1850, p. 59; *Swinhoe, Ibis,* 1863, p. 213, pl. v; *Sharpe, Cat. B. M.* i, p. 58; *id. Ibis,* 1876, p. 30; *Gurney, Ibis,* 1875, p. 225: *Hume, S. F.* xi, p. 14.

Coloration. Adult male. Very like old females of *C. melanoleucus*; above blackish brown, the feathers of the head and neck with broad white or rufous edges; ruff indistinct; back-feathers and wing-coverts with irregular grey or rufescent white spots and patches; the smaller coverts along the forearm white, sometimes with dark shaft-stripes; primary-coverts and outer surface of secondaries grey, terminal portion of primaries blackish, bases of all quills white; upper tail-coverts white, with grey or brown bars; tail grey above, whitish below, unbarred; lower parts white with blackish shaft-stripes, broad on the throat and upper breast, narrow or wanting on the abdomen.

Adult female. Brown above, the feathers throughout with pale rufous edges; tail-coverts white and rufous; tail with about six dark cross-bands, which disappear in old individuals; lower parts buff, with broad rufous-brown shaft-stripes. The quills are dark brown but become greyish in old birds.

Young birds so closely resemble those of *C. æruginosus* as to be indistinguishable at times. The pale head and neck-feathers are always striated in *C. spilonotus*, but the body, wings, and tail are uniformly brown or variegated with buff on the wing-coverts, back, and breast. Generally, though not invariably, traces of bars will be found on some of the tail-feathers of *C. spilonotus*, but this occasionally happens in *C. æruginosus* also.

Length of male 20; tail 9·25; wing 15·5; tarsus 3·5: tail of female 10; wing 16·5; tarsus 3·7.

Distribution. Southern China, extending far inland, it is said, even to Dauria, also the Philippines, Malay Peninsula, and Borneo. A young bird obtained by Capt. Wardlaw Ramsay at Toungngoo was referred to this species by Mr. Gurney, but on comparing it with young birds of both this Harrier and *C. melanoleucus*, I am inclined to assign it to the latter. Hume was convinced he saw *C. spilonotus* in Manipur, and I have very little doubt he was right. Latterly Mr. T. A. Hauxwell has shot a fine adult male near Moulmein on the Attaran, and has been so good as to send it to me for examination.

Habits, &c. Similar to those of *C. æruginosus*, but more kite-like.

Genus **BUTEO**, Cuvier, 1800.

The true Buzzards, to which the next two genera belong, are, as Blyth and Jerdon long ago pointed out, closely allied to Eagles, from which, indeed, they chiefly differ structurally by their less powerful bills and claws. By far their most distinctive character is one on which very little stress had been laid by ornithologists, though it has not escaped Prof. A. Newton, and consists in the want of any distinct immature garb; all Buzzards, so far as is known, assuming the adult plumage at once from the downy stage. It is true that a slight change is believed to be produced by age, the bars on the tail gradually disappear, and in some species there is a tendency to barring on the lower surface in old birds. The coloration, despite the want of a distinct immature phase, is exceedingly variable—pale, rufous, and melanistic forms being found in several species. These colour variations were, until recently, attributed to age, but, so far as I can ascertain, wrongly. A series of moulting specimens*, for instance of *B. ferox*, would afford valuable information, it being borne in mind that the plumage which is being shed is always faded.

In the genus *Buteo* the bill is small or moderate, the culmen is curved from the cere, the commissure nearly straight, the festoon being only slightly developed; the nostrils are oval and oblique; the wings ample and long, the 3rd, 4th, and 5th quills subequal, the 4th generally a little the longest, the first four quills deeply notched on the inner web; tail moderately long, rounded at the end; tarsus long, partly or wholly feathered in front, naked and more or less covered with transverse scutellæ behind; toes short, lateral toes and claws very unequal.

Buzzards are comparatively sluggish birds, with a heavy flight, and less given to soaring than Eagles are, though occasionally they may be seen far up in the air. They feed on small mammals, reptiles, and insects, which they seize on the ground. They make nests of sticks, lined with grass or other soft material, on rocks or trees, and their eggs are greenish white, deeply blotched with brownish red.

This genus ranges throughout a great part of the world, but only occurs in parts of India, and is unknown in Burma, the Malayan countries, and Australia. The forms found in India may be classed in three species.

Key to the Species.

a. Wing more than 16 inches.	
a'. Tarsus half-feathered, naked part in front scutellate	*B. ferox*, p. 390.
b'. Tarsus two-thirds feathered, naked part in front reticulated	*B. leucocephalus*, p. 392.
b. Wing less than 16 inches	*B. desertorum*, p. 393.

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* In selecting specimens for museums and private collections, it has been generally the practice to pick out the fine freshly moulted skins and to reject the comparatively ragged specimens that were moulting when shot; both, however, are needed for study.

1239. Buteo ferox. *The Long-legged Buzzard.*

Accipiter ferox, *S. G. Gmel. Nov. Com. Petrop.* xv, p. 443, pl. x (? 1770).

Falco rufinus, *Cretzschm. in Rüpp. Atlas, Vögel*, p. 40, pl. 27 (1826).

Buteo canescens, *Hodgs. Beng. Sport. Mag.* viii, p. 180 (1836); *Blyth, J. A. S. B.* xii, p. 308; *id. Ibis*, 1863, p. 20; *Jerdon, B. I.* i, p. 88; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 16.

Buteo longipes, *Jerdon, Madr. Jour. L. S.* x, p. 75 (1839).

Buteo rufinus, *Blyth, Cat.* p. 28; *Horsf. & M. Cat.* i, p. 61.

Buteo ferox, *Jerdon, B. I.* iii, p. 869; *Blyth, Ibis*, 1866, p. 244; *Hume, Rough Notes*, p. 274; *id. Ibis*, 1871, p. 25; *Jerdon, Ibis*, 1871, p. 338; *A. Anderson, P. Z. S.* 1872, p. 78; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Hume, S. F.* i, p. 159; iv, p. 359; vii, p. 199; *id. Cat.* no. 45; *Sharpe, Cat. B. M.* i, p. 176; *Butler, S. F.* iii, p. 447; ix, p. 374; *Gurney, Ibis*, 1876, p. 367; *Fairbank, S. F.* iv, p. 253; *Davidson & Wenden, S. F.* vii, p. 74; *Scully, S. F.* viii, p. 225; *Wardl. Ramsay, Ibis*, 1880, p. 47; *Biddulph, Ibis*, 1881, p. 42; *Scully, ibid.* p. 420; *Barnes, S. F.* ix, p. 452; *id. Birds Bom.* p. 42; *Reid, S. F.* x, p. 450; *Oates in Hume's N. & E.* 2nd ed. iii, p. 125.

Buteo fuliginosus, *Hume, Ibis*, 1869, p. 356; *nec Sclater.*

Buteo desertorum, *apud Hume, Rough Notes*, p. 268, partim; *nec Daud.*

Chuhumar, H.

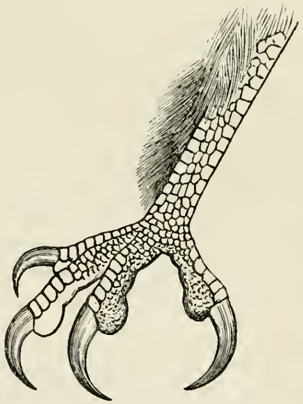

Fig. 96.—Right foot of *Buteo ferox*, ½.

Coloration very variable: there are two principal phases—dark and pale, with numerous varieties of both.

In the pale or rufous form the crown, nape, hind-neck, upper back, scapulars, and wing-coverts are brown, with broad light rufous edges and white bases, the rufous borders wearing off and the white bases becoming more conspicuous in worn plumage, the brown sometimes reduced to shaft-stripes on the crown and nape; sides of head generally paler than crown, often buff or white, with dark shaft-stripes; lower back and upper tail-coverts brown, the latter with rufous edges; quills tipped with blackish brown, extending up the first primaries to the notch on the inner web, basal portion of quills white, the primaries silvery grey on the outer web externally, and the secondaries mottled and barred with brown; tail pale rufous, bases of feathers, especially near the shafts, white, the rufous, especially on the outer web, sometimes passing into grey; traces of a broad penultimate dark band often occur, and frequently several other bands are more or less distinct; throat and breast white or buff, with dark shaft-stripes; abdomen usually brown or rufous-brown, more or less mixed with white, not unfrequently white with dark elongate spots in the middle; flanks and thigh-coverts brown or rufous-brown, the latter occasionally edged or banded with rufous or buff. Sometimes the lower parts are almost entirely white.

In the dark plumage the general coloration is brown, the head, neck, and breast generally rendered paler or more rufous by the margins of the feathers, which, however, are not so broad as in the pale birds; occasionally the head and neck are whitish with dark shafts; the quills as in the pale form, except that the white bases to the quills are often mottled with brown; tail, with rare exceptions, barred throughout or towards the end, the bars dark brown, the interspaces pale brown, grey or rufous, the last or subterminal bar generally, but not always, much broader than the others, and the other dark bars sometimes as broad as the interspaces, sometimes much narrower, occasionally broken and irregular.

The dark phase passes into a uniformly dark chocolate-brown or even blackish-brown bird (*B. fuliginosus*), with only the bases to the primaries white, and pale or sometimes whitish bars on the tail.

All these plumages vary and pass into each other. There is no distinctively young plumage. Sharpe (*l. c.*) and Hume (S. F. iv, p. 363) describe the pale form as young, the dark form as older, the blackish-brown bird as very old. The last, however, is certainly not necessarily aged, for Wardlaw Ramsay obtained a nestling covered everywhere with very dark feathers not fully grown, there are no rufous edges, and the tail is barred; whilst Dresser in the 'Birds of Europe' describes another nestling dark rufous and brown with a barred tail. He also records a moulting bird with a worn banded tail, and one new feather pale creamy rufous and unbanded. Gurney (Ibis, 1876, p. 367) regards the barred tail as a sign of immaturity.

It is evident that the dark birds are a melanistic form, and that the colour is not due to age. Such birds are common in the Himalayas, the Northern Punjab, and in Sind, rare elsewhere, and almost unknown out of India. Hume's darkest specimens were all males, but an equally dark female was shot by Capt. Butler at Hyderabad, Sind, and is now in the national collection.

Bill brownish plumbeous, tip black; cere yellowish green; irides brownish yellow; legs dingy pale lemon-yellow (*Hume*).

Length of female about 24 inches; tail 10·5; wing 18 to 19·25; tarsus 3·75; mid-toe without claw 1·65; bill from gape 2: length of male 22; wing 16·25 to 17·9.

Distribution. S.E. Europe, N.E. Africa, S.W. Asia, and Western Central Asia. In India this Buzzard is found throughout the Himalayas as far east as Sikhim and, in the cold season, abundantly in the N.W. Provinces, Oudh, Rajputana, Sind, and the Punjab, but only an occasional straggler finds its way farther east or south. There is, however, one skin in the Hume collection from Raipur, and a few occurrences are recorded from the Deccan.

Habits, &c. Migratory, visiting North-western India from October to March, and very abundant in desert and semi-desert tracts, where it lives mainly on the Indian Desert Gerbille (*Gerbillus hurrianæ*). It is also common in marshy ground, and it feeds on frogs, rats, mice, lizards, and large insects. It is a sluggish bird, solitary, by no means shy, and generally to be seen perched on a low tree, or bush, or the ground during the day; it flies about very often in the evening and, according to Mr. A. Anderson, has somewhat crepuscular habits. Many breed in the Himalayas and Central Asia, a few in the Northern Punjab, about March and April; the nest is a loose structure of sticks lined with wool, rags, or dead leaves, placed either on a tree or on a cliff. The eggs, 2 to 4 in number, are broad regular ovals, greenish white richly blotched with reddish brown, and measure about 2·3 by 1·8.

1240. **Buteo leucocephalus.** *The Upland Buzzard.*

Butaquila leucocephala, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844), descr. nullâ.
Buteo leucocephalus, *Hodgs. P. Z. S.* 1845, p. 37; *Gurney, List Diurn. Birds of Prey*, pp. 62, 134; *Hume, Cat.* no. 46.
Buteo aquilinus, *Hodgs., Blyth, J. A. S. B.* xiv, p. 176 (1845); xv, p. 2; *Jerdon, B. I.* i, p. 90; *id. Ibis*, 1871, p. 339; *Hume & Henders. Lah. to Yark.* p. 175; *Hume, S. F.* iv, p. 366.
Buteo hemilasius, *Temm. & Schl. Faun. Japon., Aves*, p. 18, pl. vii (1845–50); *Schleg. Mus. P.-B.* ii, *Buteones*, p. 3; *Sharpe, Cat. B. M.* i, p. 182; *Gurney, Ibis*, 1876, p. 369.
Buteo asiaticus, *Lath. apud Blyth, Ibis*, 1866, p. 244; *Hume, Rough Notes*, p. 283.
Buteo ferox, *apud Sharpe, Cat. B. M.* p. 178, pt., pl. viii; *nec Gmel.*

Nearly allied to *B. ferox*, but larger, and as a rule greyer above; the bill and feet larger and the claws more powerful; the tarsus is feathered in front for two-thirds of its length, and the naked terminal third is covered with small or moderate-sized scales, not with transverse scutæ; the tarsus is generally scutellate behind, but less than in other Buzzards, and is sometimes reticulated throughout.

Coloration above rather pale greyish brown, with more or less rufous on the feathers of the nape and upper back, scapulars, wing-coverts, and upper tail-coverts; white bases of feathers often conspicuous on the head and neck, which are sometimes white streaked with brown; quills as in *B. ferox*, but there is no grey on the outer webs of the primaries; tail brown above, with dark bars, paler below, whitish near the shafts and towards the base, sometimes bordered with rufous; lower parts white, the throat streaked with brown; upper breast and abdomen with large brown spots irregularly distributed, sometimes edged with rufous; lower breast as a rule white; the upper breast, flanks, and thigh-coverts often entirely brown, and sometimes, as in Hodgson's type, the whole breast and abdomen. No rufous or fuliginous phase is known.

Bill bluish horny; irides white; legs and feet wax-yellow (*Henderson*): cere greenish yellow; irides light buff (*Shanghai Mus.* label).

Length of a female 25·5; tail 10·75; wing 19–20; tarsus 3·5; mid-toe without claw 1·8; bill from gape 2.

Distribution. Eastern Siberia, Japan, and China, a few stragglers finding their way into the Himalayas. There are two Himalayan specimens in the Hume collection—one, from Native Sikhim, closely resembling Hodgson's original specimen; the other, obtained by Dr. Henderson in November on the Pir Panjál range, south of Púnch, in Kashmir. At first Hume looked on this bird as a variety of *B. ferox*, but he subsequently recognized its distinctness.

1241. **Buteo desertorum.** *The Common Buzzard.*

Falco buteo, *Linn. Syst. Nat.* i, p. 127 (1766).

Falco desertorum, *Daud. Traité*, ii, p. 162 (1800).

Buteo vulgaris, *Leach, Syst. Cat. Mam. Birds B. M.* p. 10 (1816); *Blyth, Cat.* p. 29; *Jerdon, B. I.* i, p. 87; iii, p. 869; *Blyth, Ibis*, 1866, p. 244; *Hume, Rough Notes*, p. 261; *Jerdon, Ibis*, 1871, p. 337; *Sharpe, Cat. B. M.* i, p. 186; *Reid, S. F.* x, p. 450.

Buteo desertorum, *Vieill. Nouv. Dict. d'Hist. Nat.* iv, p. 478 (1816); *Gurney, Ibis*, 1862, p. 362; *Hume, Rough Notes*, p. 268, partim; *Jerdon, Ibis*, 1871, p. 338; *Sharpe, Cat. B. M.* i, p. 179; *Hume, S. F.* x, p. 159; *Davison, ibid.* p. 338.

Buteo plumipes, *Hodgson, P. Z. S.* 1845, p. 37; *Blyth, J. A. S. B.* xv, p. 2; *Jerdon, B. I.* i, p. 91; *Blyth, Ibis*, 1863, p. 21; 1866, p. 245; *Hume, Rough Notes*, p. 285; *Jerdon, Ibis*, 1871, p. 340; *Blanford, J. A. S. B.* xli, pt. 2, p. 41; *Sharpe, Cat. B. M.* i, p. 180, pl. vii, fig. 1; *Hume, S. F.* iv, p. 358; v, p. 347; xi, p. 12; *id. Cat.* no. 47; *Gurney, Ibis*, 1876, p. 369; *id. S. F.* v, p. 65: *Hume & Dav. S. F.* vi, p. 18; *Scully, S. F*, viii, p. 225; *Legge, Birds Ceyl.* p. 31; *Biddulph, Ibis*, 1881, p. 42; *Scully, ibid.* p. 421; *Reid, S. F.* x, p. 10; *Oates, B. B.* ii, p. 184.

Buteo rufiventer, *Jerdon, Madr. Jour. L. S.* xiii, p. 165 (1844); *id. Ill. Ind. Orn.* pl. 27.

Falco buteo japonicus, *Temm. & Schl. Faun. Jap., Aves*, p. 16, pls. vi, vi *b* (1845–50).

Buteo japonicus, *Jerdon, Ibis*, 1871, p. 337; *Hume, S. F.* iii, p. 30.

The Common Buzzard and *The Harrier Buzzard*, Jerdon; *Dang-pang-ti-ong*; *Pang-ti-ong-nok*, Lepcha.

Coloration variable. The upper plumage is brown, paler or darker, the feathers more or less dark-shafted and, except on the lower back, generally tipped or edged with rufous, especially on the crown, nape, and some of the wing-coverts; the white bases of the feathers on the head and nape are less conspicuous in general than in *B. ferox*; sides of head paler than crown, usually more or less streaked brown, the streaks generally forming a dark or blackish moustachial stripe from the gape, and frequently another streak running back from the eye; primary-quills with long dark brown or blackish ends, all the remainder white beneath the wing, brown on the outer web above, rufous or white on the inner and more or less barred and mottled; secondaries chiefly brown outside, inner webs partly white or rufous, whitish inside, and with dark cross-bands; tail brown or sometimes rufous above, whitish below, more or less distinctly barred, the bars variable in number and breadth, the last generally but not always broadest. Lower parts white or buff or (rarely) rufous, the throat with dark streaks, and the breast and abdomen somewhat irregularly spotted or marked with brown; the flanks and thigh-coverts and sometimes the abdomen all brown, or the two latter brown with more or less indistinct white or buff bars.

Typical *B. plumipes* is dark smoky or chocolate-brown throughout, except the bases of the quills, which are white or whity-brown mottled and barred darker, and the tail, which is banded with lighter brown. There are also in some skins a few partly concealed white spots on the feathers of the abdomen. Some specimens have the head, neck, and breast rufous-brown, and some are intermediate in colour between the fuliginous phase and the ordinary colouring.

Bill black, bluish grey towards the base; cere yellow; irides brown; legs and feet yellow; the tarsus feathered in front from halfway down or rather less to two-thirds, generally scutellate in front below the feathering, but occasionally reticulate.

Length of female about 20; tail 9; wing 15·5; tarsus 2·8; mid-toe without claw 1·5; bill from gape 1·47: males are less, wing 14·5.

As a rule Eastern Asiatic and Himalayan birds (*B. plumipes* or *japonicus*) are distinguished from European (*B. vulgaris*) by having the tarsus feathered farther down in front, and often by being more rufous; whilst African specimens (*B. desertorum*) are smaller and on an average decidedly more rufous. The feathering of the tarsus, however, was shown by Hume to be very variable; coloration in these Buzzards affords no constant distinction; and some Southern Indian birds are even smaller than African, as Hume has shown, and have a very naked tarsus. In fact there is no distinct character by which *B. vulgaris, B. desertorum,* and *B. plumipes* can be distinguished; they are mere races imperfectly differentiated, and all three are represented by typical examples amongst Indian collections. I do not think they should be regarded as separate species.

Distribution. The greater part of Europe, Asia, and Africa. This Buzzard is found throughout the Himalayas, and in the Nilgiris and other high ranges of Southern India; it is probably resident on the Himalayas, but, so far as is known, only a cold-weather visitor to the Peninsula of India. In winter it has occasionally been met with in Ceylon, and also at Thayet Myo in Pegu and at Thatone in Tenasserim.

Habits, &c. Very similar to those of *B. ferox*, except that the Common Buzzard is chiefly found in the open parts of woodland hilly countries. The nest has not been taken within Indian limits; both nest and eggs are very similar to those of *B. ferox*.

Genus **ARCHIBUTEO**, Brehm, 1828.

Precisely the same as *Buteo*, except that the tarsus is feathered in front throughout to the base of the toes, though naked and with large transverse scutellæ behind. The distinction is convenient, but is scarcely of generic importance.

Four nearly allied species are recorded, of which one occurs occasionally in the higher Himalayas.

1242. **Archibuteo hemiptilopus.** *The Himalayan Rough-legged Buzzard.*

Hemiætus strophiatus, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844), descr. nullâ.

Archibuteo strophiatus, *Gray, Cat. Mamm. &c. Coll. Hodgs.* p. 39 (descr. nullâ); *Jerdon, Ibis,* 1871, p. 340; *Sharpe, Cat. B. M.* i, p. 199, pl. vii, fig. 2; *Brooks, J. A. S. B.* xliii, pt. 2, p. 242; *id. S. F.* iv, p. 272.

Archibuteo hemiptilopus, *Blyth, J. A. S. B.* xv, p. 1 (1846); *id. Cat.* p. 28; *Horsf. & M. Cat.* i, p. 383; *Jerdon, B. I.* i, p. 94; *Hume, Rough Notes,* p. 292; *id. S. F.* i, p. 315; iv, p. 369; *id. Cat.* no. 49; *Gurney, Ibis,* 1876, p. 370; 1879, p. 178.

Archibuteo cryptogenys, *Hodgson, Calc. Jour. N. H.* viii, p. 96, pl. 3, fig. 1 (1848).

Archibuteo leucoptera, *Hume, S. F.* i, p. 318.

The Brown Eagle Buzzard, Jerdon.

Coloration very similar to that of *Buteo leucocephalus.* Upper parts brown, feathers of nape and upper back broadly edged with rufous, a few of the wing-coverts the same in some specimens; upper tail-coverts with rufous or buff tips and bars, bases of nuchal feathers white; quills as in *Buteo ferox*; tail brown above, sometimes pale rufous in part, whitish below, barred darker; lower parts brown, with or without rufous, or white with brown spots on the throat and breast; flanks and thigh-coverts always brown. When the lower parts are brown, the middle of the breast is often white or rufous.

One specimen is dark chocolate-brown throughout, there is scarcely any white even on the bases of the primaries, and pale bands only on the basal portion of the tail. Another described by Mr. Gurney was rufous on the tail and lower parts, the lower breast and abdomen transversely barred with rufous and dark brown.

Bill dusky horn-coloured, yellowish laterally at base of mandible; toes and naked part of tarsus livid waxy, claws horny black (*Blyth*).

Length 28 inches?; tail 11; wing 20; tarsus 3·25; mid-toe without claw 1·75; bill from gape 1·9.

Distribution. A rare bird, of which a few specimens have been obtained at high elevations in Sikhim, Nepal, and Kúlú. It has also occurred near Shanghai in China. Nothing is known of its habits.

Genus **ASTUR**, Lacépède, 1801.

This and the next two genera contain the typical Hawks, which are distinguished from Falcons, Eagles, Buzzards, Harriers, and Kites by having proportionally shorter and more rounded wings, and from all except the Harriers by having the tibia and tarsus nearly equal in length.

The true Hawks are chiefly found in forest or well-wooded tracts, and they always breed on trees. The sexes are very different in size. "Their flight is often near the ground and is performed by a few rapid strokes of the wings, alternating with a sailing with outspread wings. They are more arboreal in their habits than the Falcons, hunting in woods or on the skirts of woods, or along avenues and hedgerows, and they generally seize their prey by a sudden pounce during their flight, not following the quarry to any distance as the Falcons do." (*Jerdon.*)

Although the group is here divided into three genera, the generic distinctions are not very marked, and all the species are by some naturalists referred to a single genus, whilst Kaup and Gurney refer each of the six Indian kinds to a different generic section.

The genus *Astur* as here admitted has a short stout bill curving sharply from the cere, with a large festoon; the nostril is moderate in size and oval. The wing is short and rounded, extending to about the middle of the long tail. Usually the 4th quill is longest, occasionally the 3rd or 5th, the three not differing greatly in length. Tarsus long, stout, scutellate in front and behind, reticulate on the sides, only the upper part covered with feathers; toes and claws moderate, the bill from the gape measuring $\frac{1}{2}$ to $\frac{2}{5}$ the length of the tarsus and about $\frac{2}{3}$ the length of the outer toe. The plumage is grey or brown above, spotted beneath in the young, transversely barred in adults.

Besides the true Goshawks, the present genus contains a number of smaller Hawks, two of which are Indian, the others being very widely distributed. Of the Indian species *A. badius* has been distinguished as *Scelospiza* or *Scelospizias*, *A. soloensis* as *Tachyspiza*. The generic name *Micronisus* employed by Jerdon really belongs to an African group known as *Melierax*.

Key to the Species.

a. Fourth quill longest.
  a′. Size large wing 12 to 15 .... *A. palumbarius*, p. 397.
  b′. Size small, wing 7 to 9 .... *A. badius*, p. 398.
b. Third quill longest, wing about 7·5 ...... *A. soloensis*, p. 400.

1243. **Astur palumbarius.** *The Goshawk.*

Falco palumbarius, *Linn. Syst. Nat.* i, p. 130 (1766).
Astur palumbarius, *Cuv. Règne An.* i, p. 320; *Blyth, Cat.* p. 23; *Horsf. & M. Cat.* i, p. 41; *Jerdon, B. I.* i, p. 45; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 13; *Hume, Rough Notes*, p. 112; *id. N. & E.* p. 24; *id. Cat.* no. 21; *id. S. F.* xi, p. 6; *Jerdon, Ibis*, 1871, p. 243; *Sharpe, Cat. B. M.* i, p. 95; *Gurney, Ibis*, 1875, p. 353; *Biddulph, Ibis*, 1881, p. 40; *Scully, ibid.* p. 419; *Oates in Hume's N. & E.* 2nd ed. iii, p. 118.

Baz ♀, *Jarra* ♂, H.

Coloration. In adult birds the upper parts are brown, with a more or less ashy tint, occasionally almost ashy grey; the crown, area behind eye, ear-coverts, and sides of neck darker, sometimes almost black; forehead, lores, long supercilia, and nuchal patch uniting them behind streaked and mixed with white; quills brown above, whitish below, with dark bars; tail light brown or brown mottled with white above, paler below, crossed by four broad dark brown bars and tipped buffy white; lower parts white, with blackish shafts and brown bars, which become narrower and more numerous in older birds; lower tail-coverts white unbarred.

Young birds are brown above, most of the feathers edged or tipped with buffy white; crown, nape, and hind-neck with broad buff or pale rufous edges; quills as in the adult, but with the barring more distinct above; tail with 5 dark cross-bars and tipped with buff; lower parts buff or pale rufous, with brown longitudinal oval spots, each having a black shaft-line in the middle. Nestlings are covered with pure white down.

Length of female 24; tail 11; wing 14; tarsus 3·3: of a male—length 20; tail 9·5; wing 12·5; tarsus 3·2.

Bill bluish horny; cere yellow, with a greenish tinge; iris and legs yellow.

Distribution. Europe generally; Northern and Central Asia. The Goshawk is found throughout the Himalayas, but not at low elevations except occasionally in winter. Hume obtained a specimen from the Khási hills. Jerdon thought he had seen this bird on the Nilgiris, but it has not since been observed there or elsewhere in the Indian Peninsula.

Habits, &c. The Goshawk keeps to woods, and preys on pheasants, partridges, pigeons, and other birds and on small mammals. It breeds on trees in the Himalayas from March till June, making a large circular nest of coarse twigs, and laying 3 or 4 eggs, usually nearly pure white, but occasionally spotted or blotched.

The hen Goshawk is the favourite Hawk for sporting in India; many are brought from the Himalayas and Central Asia and trained to strike Houbara bustard, duck, hares, and sometimes partridges. It is flown from the hand, and flies directly at the quarry.

1244. **Astur badius.** *The Shikra.*

Falco badius, *Gmel. Syst. Nat.* i, p. 280 (1788).
Falco dussumieri, *Temm. Pl. Col.* pls. 308, 336 (1824).
Accipiter dukhunensis, *Sykes, P. Z. S.* 1832, p. 79; *Jerdon, Madr. Jour. L. S.* x, p. 83.
Astur badius, *Kaup, Isis*, 1847, p. 190; *Davison & Wend. S. F.* vii, p. 73; *Ball, ibid.* p. 197; *Hume, Cat.* no. 23; *Scully, S. F.* viii, p. 223; *Doig, ibid.* p. 370; *Vidal, S. F.* ix, p. 30; *Legge, Birds Ceyl.* p. 23; *Butler, S. F.* ix, p. 371; *Davidson, S. F.* x, p. 286; *Davison, ibid.* p. 335; *Barnes, Birds Bom.* p. 22; *Oates in Hume's N. & E.* 2nd ed. iii, p. 119.
Micronisus badius, *Bonap. Consp. Av.* i, p. 33; *Blyth, Cat.* p. 22; *Horsf. & M. Cat.* i, p. 39; *Jerdon, B. I.* i, p. 48; *Hume, Rough Notes*, p. 117; *id. N. & E.* p. 24; *id. S. F.* i, p. 157; *A. Anderson, P. Z. S.* 1871, p. 682; 1875, p. 19; *Sharpe, Cat. B. M.* i, p. 109; *Blyth & Wald. Birds Burm.* p. 62; *Biddulph, Ibis*, 1881, p. 40; *St. John, Ibis*, 1889, p. 152.
? Astur cenchroides, *Severtz. Turk. Jev.* p. 113 (1873); *id. S. F.* iii, p. 422.
Micronisus poliopsis, *Hume, S. F.* ii, p. 325 (1874); *Hume & Oates, S. F.* iii, p. 24; *Hume & Inglis, S. F.* v, p. 9.
Astur poliopsis, *Sharpe, Cat. B. M.* i, p. 110; *Bingham, S. F.* v, p. 81; *Hume & Dav. S. F.* vi, p. 7; *Cripps, S. F.* vii, p. 243; *Hume, Cat.* no. 23 bis; *Bingham, S. F.* ix, p. 143; *Oates, B. B.* ii, p. 179; *Hume, S. F.* xi, p. 7.
Scelospizias badius, *Gurney, Ibis*, 1875, pp. 357, 360; *Scully, Ibis*, 1881, p. 419.
Scelospizias poliopsis, *Gurney, ibid.* p. 361; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 571; v, p. 557; vii, p. 374.
? Astur (Micronisus) sp., *Blanf. East. Pers.* ii, p. 108.
Accipiter brevipes, *apud St. John, Ibis*, 1889, p. 152; *nec Sev.*

Shikra ♀, *Chipka* or *Chippak* ♂, H.; *Kathia* ♀, *Tunna* ♂, Nepal; *Jali dega*, Tel.; *Chinna wallur*, Tam.; *Ukussa, Kurula goya*, Cing.; *Ting-Kyi*, Lepcha; *U-cham*, Bhot.; *Thane*, Burm.

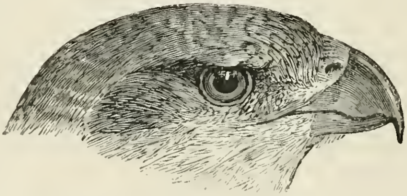

Fig. 97.—Head of *A. badius*, $\frac{1}{1}$.

Coloration. Adult male. Upper plumage ashy grey, generally with a brownish or rufescent collar, which, however, is not always present; quills blackish at the ends, the inner webs except near the tip white or buff, marked with blackish bars; median and outermost tail-feathers not barred or obsoletely barred, the other rectrices with 4 or 5 broadish dark bars, the last subterminal; sides of head and neck paler and more rufescent than crown; chin and throat buff or white, with a more or less distinct median grey stripe, sometimes wanting; breast rufous, varying from rusty to vinous red, with numerous narrow white bars, varying in regularity and distinctness, but never wanting; the red gradually fades on the abdomen, and the vent, under tail-coverts, and thigh-coverts are white or buff; wing-lining buff.

Females are browner and less grey above than old males, and the rufous of the lower surface is deeper and less rusty red, but the pure grey upper plumage and the rusty red lower surface are, according to Jerdon, not assumed before the 4th or 5th year.

Young birds are brown above, the feathers at first with rufous edges, their white bars conspicuous on the head and nape; all the tail-feathers are barred, the bars on the outer feathers narrower and rather more numerous: the lower parts are white, with large elongate brown spots, largest on the breast, and there is generally a median brown stripe on the throat.

Bill bluish dusky at the tip; cere bright yellow; irides yellow, becoming deep orange in old birds; legs and feet yellow.

Length of females about 14; tail 7: wing 8·25; tarsus 2; bill from gape 0·8: in males the length is about 12·5; wing 7. Ceylon and Southern birds are a little smaller, Burmese and Sind birds larger.

Distribution. Resident throughout India, Burma, and Ceylon, ascending the hills of the Indian Peninsula to their summits, and breeding on the Himalayas up to about 5000 feet. This Hawk ranges westwards into Southern Persia, north (if *A. cenchroides* be the same) into Central Asia, and eastwards to Siam, Cambodia, and Southern China. At Gilgit, according to Scully, the Shikra is migratory, passing northwards in April, and southwards in September.

The Burmese Shikra is a well-marked race, and has been distinguished as *A. poliopsis.* It is slightly larger on an average, and the male is paler grey above, without any rufescent collar, with the sides of the head greyer, and the median gular stripe faint or wanting. The bars on the lower plumage of adult males too are deeper rufous and somewhat broader. But all these peculiarities are to be found in some Southern and Western Indian birds, though not often in the same individual. A large pale form from Central Asia, found also in the Punjab, Sind, and Baluchistan, has been called *A. cenchroides* by Severtzoff. I at one time mistook some Quetta skins collected by Sir O. B. St. John, and belonging to this race, for *A. brevipes,* Sev., a different species.

Habits, &c. The Shikra is very common and well known in India, and, except in thick forest or in desert, may be met with all over the country. Its general food, as Jerdon says, appears to be lizards, but it frequently seizes small birds, rats, or mice, and sometimes does not disdain a large grasshopper. It has been seen feeding on flying termites or white ants. Its call-note is a double whistle. It is more commonly trained than any other Indian bird of prey, and is thrown from the hand at quails and partridges, or more commonly at crows. According to Jerdon it will attack even young pea-fowl and small herons. It breeds trees from April to June, making a loosely built nest of twigs and sticks lined with grass-roots, and laying usually 3, sometimes 4, smooth, bluish-white, glossless eggs, usually unspotted, very rarely with a few small greyish specks, and measuring about 1·55 by 1·22.

1245. **Astur soloensis.** *Horsfield's Short-toed Hawk.*

Falco soloensis, *Horsf. Tr. Linn. Soc.* xiii, p. 137 (1821).
Tachyspiza soloensis, *Kaup, Class. Säug. Vög.* p. 116.
Tachyspizias soloensis, *Gurney, Ibis*, 1875, p. 365.
Micronisus soloensis, *Horsf. & M. Cat.* i, p. 38; *V. Pelzeln, Reise Nov., Aves*, p. 12; *Ball, S. F.* i, p. 52; *Hume, S. F.* ii, p. 141.
Astur soloensis, *Sharpe, Cat. B. M.* i, p. 114, pl. iv, fig. 1; *Hume, S. F.* v, p. 124; *Hume & Dav. S. F.* vi, p. 8; *Hume, Cat.* no. 23 ter; *Bingham, S. F.* ix, p. 143; *Oates, B. B.* ii, p. 180.

Coloration. Adult. Upper parts blackish ashy, basal portions of scapulars and of inner webs of quills white, the latter more or less banded; tail barred as in *A. badius*, the middle and outer feathers unbarred in old birds; sides of head and neck ashy grey; throat buffy white, streaked with grey; breast and flanks almost uniform vinous or ferruginous red, passing on the abdomen and thigh-coverts into white on the lower abdomen and under tail-coverts; wing-lining buff. Sexes similar in colour and size.

Young birds very similar to those of *A. badius*, but darker above. Birds that have not attained the fully adult plumage have all the tail-feathers banded and traces of barring on the breast.

Bill horny plumbeous; cere and orbits light yellow; irides pale straw-colour; legs and feet orange-yellow.

Length of a female 12; tail 5·4; wing 7·5; tarsus 1·6; bill from gape 0·8. The third quill is longest, fourth slightly shorter.

Distribution. Southern China to the Malay Peninsula and Archipelago as far as New Guinea, and in Southern Tenasserim. A specimen was obtained by Bingham near the Thoungyin River, almost west of Moulmein, another at Malewoon by Davison, and a third on Car Nicobar by the 'Novara' Expedition.

Habits, &c. A forest bird. The specimen shot by Bingham had been feeding on lizards and frogs. Nidification not known.

Genus **LOPHOSPIZIAS**, Kaup, 1844.

Similar to *Astur*, except that there is a small crest formed by the nuchal feathers being somewhat lengthened, and the lower surface in adults is differently marked. There are two species, one of which is peculiar to Celebes, the other is Indian.

1246. **Lophospizias trivirgatus.** *The Crested Goshawk.*

Falco trivirgatus, *Temm. Pl. Col.* pl. 303 (1824).
Spizaëtus rufitinctus, *McClelland, P. Z. S.* 1839, p. 153.
Astur indicus, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844), descr. nullâ.
Lophospiza trivirgatus, *Kaup, Class. Säugth. Vög.* p. 118; *Hume, Rough Notes*, p. 116; *Bourdillon, S. F.* iv, p. 355; ix, p. 299.
Astur trivirgatus, *Blyth, Cat.* p. 23; *Horsf. & M. Cat.* i, p. 42; *Beavan, P. Z. S.* 1868, p. 394; *Sharpe, Cat. B. M.* i, p. 105; *Butler, S. F.* iii, p. 439; *Ball, S. F.* vii, p. 197; *Hume, Cat.* no. 22: *Legge, Birds Ceyl.* p. 20; *Davison, S. F.* x, p. 334; *Oates, B. B.* ii, p. 177; *id. in Hume's N. & E.* 2nd ed. iii, p. 119; *Barnes, Birds Bom.* p. 22.
Astur (Lophospiza) trivirgatus, *Jerdon, B. I.* i, p. 47; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 92; *Hartert, J. f. O.* 1889, p. 375.
Lophospizias trivirgatus, *Gurney, Ibis*, 1875, p. 355; *id. S. F.* v, p. 502: *Blyth & Wald. Birds Burm.* p. 62; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii. p. 374.
Lophospiza indica, *Hume & Oates, S. F.* iii, p. 24; *Hume & Inglis, S. F.* v, p. 8.
Lophospiza rufitinctus, *Hume, S. F.* v, p. 124; *Hume & Dav. S. F.* vi, p. 7.
Astur rufitinctus, *Hume, S. F.* vii, p. 197; xi, p. 7; *id. Cat.* no. 22 bis.

Gor Besra, Manik Besra, Koteswar, H.; *Churiari, Jamal Kathi, Jurye*, Nepal; *Kokila dega*, Tel.

Coloration. Adult. Forehead, crown, and small nuchal crest blackish, passing into ashy on the sides of the head and neck, the feathers dark-shafted; cheeks and ear-coverts ashy; upper parts from the nape dark brown with more or less gloss; upper tail-coverts tipped white; quills with blackish bars, ill-marked above, distinct below; tail-feathers with 4 broad blackish bands; chin and throat white with 3 blackish stripes, one median and one on each side bordering the grey cheeks; breast-feathers rufous-brown, paler or darker, with white edges, the amount of brown apparently increasing with age; abdomen and thigh-coverts transversely barred white and brown, the bars broader on the abdomen than on the thighs; under tail-coverts white; under wing-coverts buffy white with brown spots.

Young birds are brown above, the feathers with pale edges and the buff basal portions showing on the head and neck; lower surfaces buff, with indications of the three gular stripes, and with some brown spots on the breast, abdomen, and under tail-coverts, and a few dark bars on the thigh-coverts.

Bill dark bluish brown, blackish at the tip; cere, gape, and eyelids greenish yellow; irides golden yellow; legs and feet dull or pale yellow.

Himalayan females measure: length about 18 inches; tail 8·5; wing 10·5; tarsus 2·75; bill from gape 1·2: males rather less, wing 9·3. Birds from Southern India and Ceylon are much smaller—length of females about 16; tail 7; wing 8·5; tarsus 2·3; bill from gape 1·1: of males, length 14·5, wing 8. The large race is *L. rufitinctus* of McClelland and *L. indicus* of Hodgson; the smaller agrees with typical *L. trivirgatus*, originally described from Sumatra. As there is no distinction except size, this is clearly one of the numerous instances in which Northern Indian birds are much larger than their South Indian, Ceylonese, and Malay representatives; and, as Mr. Gurney has shown, both forms vary in size and pass into each other.

Distribution. The great forests and hilly tracts of India, Ceylon, and Burma, the Malay Peninsula, Cambodia, Sumatra, Java, Borneo, the Philippines, Formosa, and probably Southern China and Siam. In India generally this is a rare bird. It has been recorded from the Himalayas as far west as Kumaun, and Butler believed he saw an individual at Mount Abu.

Habits, &c. A forest bird, living chiefly in high trees, and feeding on small birds and lizards. It has a shrill whistling call. The nest has been found on a high tree in Sikhim on May 2nd and in Travancore in April, and contained in one case two eggs, in the other two young birds. The eggs were pale greenish white and measured 2 by 1·4 inches.

Genus **ACCIPITER**, Brisson, 1760.

This genus, to which the true Sparrow-Hawks belong, is separated from *Astur* on account of the much greater length and slenderness of the tarsi and toes. The middle toe is especially long, projecting far beyond the others. The bill from the gape is about one-third the length of the tarsus and about one-half the middle toe with the claw.

The genus *Accipiter* is almost cosmopolitan and comprises about 25 species, of which two are Indian.

Key to the Species.

a. No gular stripe; 5 or 6 dark bars, one terminal, on 4th quill in adults	*A. nisus*, p. 402.
b. Generally a dark gular stripe; 7 or 8 dark bars on 4th quill in adults	*A. virgatus*, p. 404.

1247. **Accipiter nisus.** *The Sparrow-Hawk.*

Falco nisus, *Linn. Syst. Nat.* i, p. 130 (1766).
Falco nisosimilis, *Tickell, J. A. S. B.* ii, p. 571 (1833).
Accipiter subtypicus, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844), descr. nullâ.
Accipiter nisus, *Blyth, Cat.* p. 21; *Horsf. & M. Cat.* i, p. 35; *Jerdon, B. I* i, p. 51; *id. Ibis*, 1871, p. 243; *Hume, Rough Notes*, p. 124; *id. N. & E.* p. 25; *Sharpe, Cat. B. M.* i, p. 132; *Hume, S. F.* iv, p. 280; xi, p. 7; *id. Cat.* no. 24; *Hume & Dav. S. F.* vi, p. 10; *Oates, B. B.* ii, p. 181; *id. in Hume's N. & E.* 2nd ed. iii, p. 122; *Barnes, Birds Bom.* p. 24.
Accipiter melanoschistus, *Hume, Ibis*, 1869, p. 356; *id. Rough Notes*, p. 128; *Blanf. S. F.* v, p. 482; *Hume, S. F.* vii, p. 333; *id. Cat.* no. 24 bis; *Biddulph, Ibis*, 1881, p. 41.

The European Sparrow-Hawk, Jerdon; *Basha* ♀, *Bashin* * ♂, H.; *Warnapa dega*, Tel.

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* As noticed by Blyth, J. A. S. B. xix, p. 331, *Basha* is a masculine noun and, it may be added, *Bashin* is feminine. It is not probable that native falconers mistake the sex of Hawks, as they evidently know those of Falcons.

Coloration. Adult male. Upper parts slaty grey, some birds darker than others, the white bases of the feathers showing more or less on the nape and supercilia; feathers of scapulars, rump, and upper tail-coverts, and sometimes of the back, dark-shafted; quills dark brown above, whitish beneath, with broad blackish cross-bands; tail generally with 4 (sometimes 5) cross-bars on the middle feathers, 5 or 6 on the outer, the last bar broadest and subterminal, tips of feathers white; lower parts white or buff, the feathers more or less distinctly dark-shafted; breast and flanks very often suffused with rusty red, the throat with a few dark shaft-lines; the breast, abdomen, and thigh-coverts rather irregularly barred with rufous-brown, the bars usually as broad as the interspaces, but in very old birds either rusty red or narrow and dark brown; under tail-coverts white.

Adult females are browner above, and less rufous beneath, with the dark shafts to the feathers of the breast more conspicuous.

Young birds are brown above, the feathers with rufous edges at first, the white very conspicuous on the nape and supercilia; lower parts white, buff, or brownish buff; feathers of the breast, abdomen, and lower wing-coverts with dark shafts and spade- or heart-shaped rufous-brown spots with dark edges; these spots pass into bars.

Bill bluish grey; cere, legs, and toes yellow, claws black; irides yellow in young birds, orange in old.

Sexes very different in size. Length of female about 15; tail 7; wing 9·5; tarsus 2·4; mid toe without claw 1·6; bill from gape ·85: in the male, length about 13; tail 6·5; wing 8; tarsus 2·1.

Distribution. Throughout Europe and Northern Asia; a winter visitant to the Peninsula of India, China, and Northern Africa. It is found in the Indian Peninsula in jungly and well wooded hilly tracts, not in dense forest nor in very open country; it is rare in Burma, and has not been hitherto obtained in Ceylon. It is resident and breeds on the Himalayas; the Himalayan race, which is rather large (wing in females 10 to 10·5) and very dark-coloured above, in females especially, having been distinguished by Hume as *melanoschistus.* This form, however, cannot be regarded as more than a variety.

Habits, &c. The Sparrow-Hawk is everywhere known for its swiftness and courage; it keeps principally to woodland tracts and glides amongst trees and bushes with marvellous ease. It feeds chiefly on birds and captures them up to the size of a pigeon. It is easily trained, and the female has been taught to take partridges and sand-grouse, but is generally used for smaller prey. It breeds in the Himalayas in May and June, builds a rough nest of sticks on a tree, or takes possession of a deserted crow's nest, and lays usually 4 eggs, but sometimes as many as 6 or 7. These are bluish white, oval, much spotted and blotched with rufous-brown, especially towards the broader end, and measure about 1·7 by 1·3.

1248. **Accipiter virgatus.** *The Besra Sparrow-Hawk.*

Falco virgatus, *Reinw.*, *Temm. Pl. Col.* pl. 109 (1824).
Accipiter besra, *Jerdon, Madr. Jour. L. S.* x, p. 84 (1839); *id. Ill. Ind. Orn.* pls. 4, 29.
Accipiter affinis, *Hodgson in Gray's Zool. Misc.* p. 81 (1844), descr. nullâ.
Accipiter nisoides, *Blyth, J. A. S. B.* xvi, p. 727 (1847); *id. Cat.* p. 22; *id. Ibis*, 1865, p. 28; 1866, p. 239; 1870, p. 158; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 13.
Accipiter virgatus, *Blyth, Cat.* p. 22; *Horsf. & M. Cat.* i, p. 37; *Jerdon, B. I.* i, p. 52; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Hume, Rough Notes*, p. 132; *Jerdon, Ibis*, 1871, p. 243; *Holdsworth, P. Z. S.* 1872, p. 411; *Adam, S. F.* i, p. 368; *Hume, S. F.* ii, p. 141; iii, p. 445; iv, p. 280; ix, p. 231; xi, p. 8; *id. Cat.* no. 25; *Sharpe, Cat. B. M.* i, p. 150; *Blyth & Wald. Birds Burm.* p. 62; *Gurney, Ibis*, 1875, p. 480; *A. Anderson, P. Z. S.* 1875, p. 19: *Butler, S. F.* v, p. 226; *Hume & Dav. S. F.* vi, p. 10; *Ball, S. F.* vii, p. 197; *Sharpe, S. F.* viii, p. 440; *Gurney, ibid.* p. 443; *Legge, Birds Ceyl.* p. 26; *Parker, S. F.* ix, p. 475; *Reid, S. F.* x, p. 6; *Davison, ibid.* p. 335; *Oates, B. B.* ii, p. 182; *id. in Hume's N. & E.* 2nd ed. iii, p. 124; *Barnes, Birds Bom.* p. 24.
Astur gularis, *Temm. & Schl. Faun. Jap., Aves*, p. 5, pl. 2 (1845–50).
Teraspizias rhodogastra, *Blyth, Birds Burm.* p. 62; *nec* Nisus rhodogaster, *Schleg.*; *Gurney, Ibis*, 1876, p. 278.

Besra ♀, *Dhoti* ♂, *Khand Besra, Khandesra*, H.; *Vaishtapa Dega*, Tel.; *Urchitlu*, Can.; *Ukissa*, Cing.

Coloration. Adult male. Above slaty grey, generally dark, occasionally blackish; nuchal feathers and scapulars white at the base; sides of head paler than crown and rufescent; quills brownish grey above, whitish below, with broad dark cross-bars almost throughout, 7 or 8, including the terminal band, on 4th quill; tail dark ashy above, paler below, with 4 broad black cross-bands on all feathers except the outer pair, which have five or six narrower oblique bars, that disappear in old birds; throat white, generally with a broad dark median band, but this is wanting in some aged specimens; upper breast rufescent, the feathers in the middle with dark shafts and white edges: lower breast, abdomen, and thigh-coverts banded white and rufescent brown, but generally suffused with rusty red, especially on the breast and flanks, to such an extent as partially or wholly to conceal the bars; in very old birds the breast becomes pale rufescent or even lavender-grey and the barring scarcely perceptible; vent and lower tail-coverts always white.

Adult females differ in being dark brown above; the crown and nape above blackish or dark slaty; wings and tail browner than in males; the throat is white, with a broad dark median stripe; upper breast mostly rufous-brown, only the sides of the feathers in the middle of the breast white, and the brown medial parts of the same often mixed with blackish; lower breast, abdomen, and thigh-coverts banded rufous-brown and white, the brown bands growing very broad and the white narrow in old birds; a ferruginous suffusion is occasionally found as in males, but appears to be rare.

Young birds brown above, the feathers with rufous margins; beneath buff or brownish white, a dark brown median band on the throat, and large brown spots on the breast, abdomen, and thigh-coverts, most elongate on the breast. The spots on the lower parts are replaced by bars as the bird grows older.

The Besra is a variable species and undergoes several changes in coloration before it becomes adult, hence many doubts have arisen as to whether one or more species are included.

Bill leaden grey, blackish at the tip; cere pale lemon-yellow; irides bright yellow, orange in old birds; legs and feet yellow.

A Himalayan female measures:—length 14·5; tail 7; wing 8; tarsus 2·15; mid toe 1·5; bill from gape ·7: the male is smaller, tail 5, wing 6·75. In Ceylon, Tenasserim, and Andaman females the wing is 7 to 7·6 long, in males 5·5 to 6·4. As usual, Northern birds are larger than Southern, Japan and Chinese specimens being even larger than Himalayan, according to Gurney's measurements. The larger Northern race is *A. gularis*. Probably the Chinese, Malay, and Philippine *A. stevensoni* is only a variety.

Distribution. A resident throughout the Himalayas, and in the great forests of the Peninsula and Ceylon, wandering occasionally into other parts of the country, as young birds have been recorded even from Sámbhar and Cutch. It has also been found occasionally in Assam and in various parts of Burma, Japan, China, South-eastern Asia generally, and the Indo-Malayan islands.

Habits, &c. A forest-hawk living on small birds chiefly, but also on lizards and insects. It is highly esteemed for sporting purposes by native falconers on account of its speed, courage, and endurance, and is thought by them superior to *A. nisus*. Very little is known of the breeding, but the nest has been taken by Mr. Gammie in Sikhim and by Mr. H. Parker in Ceylon. Both nest and eggs resemble those of *A. nisus*.

Genus **PERNIS**, Cuvier, 1817.

The Honey-Buzzards are distinguished from all other Accipitrine birds by having the lores and sides of the head, like the forehead and chin, covered with small scale-like feathers, without any bristles or bristly ends. This dense covering probably serves as a protection against the stings of bees and wasps, the combs and young of which form the principal food of the genus.

The bill is weak, rather elongate, not much hooked at the end, and with a small festoon or none; nostrils long, narrow, and oblique, the upper margin membranous. Wings long, 3rd and 4th quills subequal and longest, 5th very little shorter. Tail moderately long, slightly rounded. Tarsus short, stout, plumed halfway down in front, the naked portion covered all round with small subhexagonal non-imbricate scales; toes long, covered above with bony transverse shields, all divided except the last two or three; claws long, slightly curved, middle claw somewhat dilated on the inner side.

Honey-Buzzards occur throughout most parts of Europe, Asia, and Africa, and one species is Indian. A second, described by

Hume as *P. tweeddalii* (S. F. ix, p. 446; x, pp. 122, 573, plate), was founded on specimens from the Malay Peninsula and was at first regarded as identical with *P. brachypterus*, the type of which was sent to Blyth by Captain Berdmore from Mergui. But the description of *P. brachypterus* would apply equally well to a young *P. cristatus*, and until an unmistakable specimen is obtained from Tenasserim, *P. tweeddalii* cannot be included amongst Burmese birds.

1249. **Pernis cristatus.** *The Crested Honey-Buzzard.*

Buteo cristatus, *Cuv.*, *Vieill. Tabl. Enc. Méth.*, *Orn.* p. 1225 (March 1823).
Falco ptilorhynchus, *Temm. Pl. Col.* pl. 44 (July 1823).
Pernis cristata, *Cuv. Règne An.* éd. 2, i, p. 335 (1829); *Jerdon, Madr. Jour. L. S.* x, p. 73; *Blyth, Cat.* p. 18; *Horsf. & M. Cat.* i, p. 63; *Jerdon, B. I.* i, p. 108; *Hume, Rough Notes*, p. 330; *Blyth, Ibis*, 1870, p. 160; *id. S. F.* i, p. 103: *Anderson, P. Z. S.* 1872, p. 80; *Adam, S. F.* i, p. 369; *Brooks, J. A. S. B.* xliii, pt. 2, p. 243.
Pernis ptilorhynchus, *Steph. Gen. Zool.* xiii, pt. 2, p. 44, pl. 35; *Holdsworth, P. Z. S.* 1872, p. 414; *Hume, N. & E.* p. 55; *Butler, S. F.* iii, p. 448; *Blyth & Wald. Birds Burm.* p. 60; *Fairbank, S. F.* iv, p. 253; *Hume & Dav. S. F.* vi, p. 23; *Ball, S. F.* vii, p. 200; *Hume, Cat.* no. 57; *Butler, S. F.* ix, p. 375; *Gurney, Ibis*, 1880, p. 203; *Reid, S. F.* x, p. 13; *Davison, ibid.* p. 340; *Oates, B. B.* ii, p. 207; *Hume, S. F.* xi, p. 16; *Barnes, Birds Bom.* p. 57; *Oates in Hume's N. & E.* 2nd ed. iii, p. 181.
Pernis elliotti, *Jameson, Mem. Wern. Soc.* vii, p. 493 (1838), descr. nullâ; *Jerdon, Madr. Jour. L. S.* x, p. 74.
Pernis brachypterus, *Blyth, J. A. S. B.* xxi, p. 436 (1852); *Hume, S. F.* iii, p. 36; *id. Cat.* no. 57 bis.
Pernis ptilonorhynchus, *Sharpe, Cat. B. M.* i, p. 347; *Legge, Birds Ceyl.* p. 89.

Shahutela, Madkáre, H.; *Madhava*, Nepal; *Tenu gedda*, Tel.; *Ten prandu*, Tam.; *Jen alawa*, Can.; *Iutalu*, Yerkli; *Malsuwari*, Mhari. All names having reference to honey.

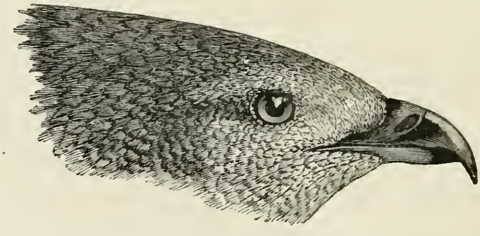

Fig. 98.—Head of *P. cristatus*, ½.

Coloration very variable. The adult plumage most commonly seen is the following: forehead, lores, sides of head, including ear-coverts and chin, ashy grey (the extent varies), passing gradually into the dark brown of the neck, body, and wings; sometimes there is a small nuchal crest of black or brown ovate feathers. Blackish shaft-stripes frequently occur on the crown, neck, back, wing-coverts, and breast, or on some of them. Primaries brown outside, whity brown inside, with black ends and two blackish bands. Tail black or blackish brown; the narrow tip, a broad band 2 to 3 inches wide about the middle, and a narrower half-inch band just beyond the coverts pale greyish brown.

The ashy grey of the head is sometimes wanting, the brown of the upper surface is not always uniform, and the lower surface is often lighter than the upper, and is in many birds spotted or transversely banded with white; the throat may be light brown mixed with white, or mainly white, and is not unfrequently marked with three blackish longitudinal stripes, generally united behind.

In young birds the crown and nape are light rufous with dark shaft-stripes and white bases, the latter usually conspicuous; occasionally the whole head is white with blackish stripes; the upper parts are brown, the feathers more or less edged with white; quills and tail very irregularly mottled and barred with ashy brown; lower parts either pure white with or without dark brown longitudinal stripes or drops, or pale or dark brown with blackish shaft-stripes. The crest is generally well developed, but the crest-feathers are only about ½ to ¼ inch longer than the others.

"In most birds in a transition state the feathers of the lower parts are banded brown and white, especially on the lower abdomen, thigh-coverts, &c., and some of these feathers are generally to be found at all ages" (*Jerdon*).

Hume has pointed out that the adults may always be known by the broad pale cross-band on the tail not being barred though it may be mottled.

Bill blackish, gape and base of lower mandible bluish; cere deep leaden colour; iris golden yellow, brownish yellow, or red; legs and feet yellow.

Length of females about 27 inches; tail 10·5; wing 17·1; tarsus 2; mid-toe without claw 2·1; bill from gape 1·7. Males run rather smaller: length 25 inches, wing 16. Birds from Southern India, Ceylon, and Burma are smaller than those from Northern India.

Distribution. Almost throughout India, Ceylon, and Burma, in suitable places; also in Siam, Cochin China, the Philippine Islands, the Malay Peninsula, Sumatra, Java, and Borneo. This bird is only found in the Himalayas below about 4000 feet, and it is in these mountains rare to the eastward, though specimens were obtained by Mandelli in Sikhim; it occurs in the Punjab, but has not been observed in Sind. It is most common in well-wooded and well-watered tracts. It is partially at all events migratory in Ceylon, and probably in parts of India. It is rare in Tenasserim, but less so in Pegu and Upper Burma.

Habits, &c. The Crested Honey-Buzzard lives amongst trees and is occasionally seen soaring above them. Its flight is direct and hurried rather than quick, and it seldom flies far, except when soaring. It feeds principally on the combs of bees,—eating honey, wax, and larvæ,—also on bees themselves, on other insects, on reptiles, and it is said on the eggs and young of small birds. It is by no means a shy bird, and is often found living and even breeding in well-wooded gardens and in groves around houses. It breeds from April to July in Northern India, builds a nest of sticks thickly lined with leaves or grass (often with green leaves) on a fork of a tree, and lays usually two eggs, but sometimes only one, broad oval in shape, white or buff thickly mottled and blotched with blood-red, reddish or yellowish brown, and measuring about 2·03 by 1·72.

Genus **MACHÆRHAMPHUS**, Westerman, 1848.

This remarkable genus has been placed by ornithologists generally near *Pernis*, which it resembles in its densely feathered lores. At the same time the peculiar very compressed bill and wide gape and the long unequal toes and claws show the present to be a very aberrant and specialized form. It comprises two species—one inhabiting South Africa and Madagascar, the other a Malay bird found also in Southern Tenasserim.

The bill is small and excessively compressed anteriorly, so that the sharply curved culmen forms a narrow keel; cere very thin and inconspicuous, the feathering of the lores extending almost to the elongate narrow quasi-longitudinal nostril. Gape very broad. A nuchal crest present. Feathers of lores dense but not scale-like, without bristles in the Indian species. Wings long, the 3rd quill longest; tail moderate, square, lower tail-coverts long. Tarsus only feathered at the base in front, naked portion reticulated; toes very long, unequal, outer much longer than inner, but the inner claw much larger than the outer and nearly equal to the hind claw, middle claw slightly dilated on the inner side.

1250. **Machærhamphus alcinus.** *The Slender-billed Pern.*

Machærhamphus alcinus, *Westerm. Bijd. t. d. Dierk.* i, p. 30, pl. (1848); *Sharpe, Cat. B. M.* i, p. 342; *Hume, S. F.* iii, p. 269; *id. Cat.* no. 57 ter; *Hume & Dav. S. F.* vi, p. 24; *Gurney, Ibis,* 1879, p. 464; *Oates, B. B.* ii, p. 206.

Coloration. Black more or less tinged with brown, except the feathers on the upper and lower eyelids and on the throat and middle of the breast, which are white; a black stripe from the chin down the middle of the throat. In some specimens, probably immature, there is more white on the breast, and indications of bars on the tail-feathers, and a Malacca skin shows a narrow white collar.

Bill black; cere very thin (apparently black); irides bright yellow; legs and feet pale plumbeous (*Davison*).

Length of a male 18; tail 7; wing 14·4; tarsus 2·4; mid-toe without claw 1·9; bill from gape 1·8.

Distribution. Malay Peninsula, Borneo, and New Guinea; a single specimen was obtained by Mr. Hough at Malewoon in the extreme south of Tenasserim. Nothing is known of the habits, but the bird is very probably crepuscular.

Genus **BAZA**, Hodgson, 1836.

This is another generic type the relations of which are very doubtful. It has been referred by different naturalists to the Kites, to the Falcons, and to the Honey-Buzzards.

There is a long nuchal crest of but few feathers. The bill is stout, the culmen well curved, and the cutting-edge of the upper mandible furnished in adults with two teeth or projecting angles on each side (in young birds the tooth is often single); the cere is small; nostrils narrow, slightly oblique, with the upper border membranous. Wings moderate, the 3rd or 4th quill longest; tail extending beyond the closed wings, square at the end. Feathers on anterior part of flanks very long, covering the sides of the abdomen. Tarsus short, feathered in front for half its length or rather more, naked parts reticulated; toes scutellate above; middle toe about as long as the tarsus, outer toes subequal.

This genus is found in Africa and Madagascar, the Oriental region and parts of the Australian. About a dozen species are known, of which three occur within our limits.

Key to the Species.

a. Upper plumage chiefly black; 3rd quill longest. *B. lophotes*, p. 409.
b. Upper plumage brown; 4th quill longest.
  a'. Sides of throat rufous in adults; wing 13 . . *B. jerdoni*, p. 411.
  b'. Sides of throat grey in adults; wing 12 . . . . *B. ceylonensis*, p. 411.

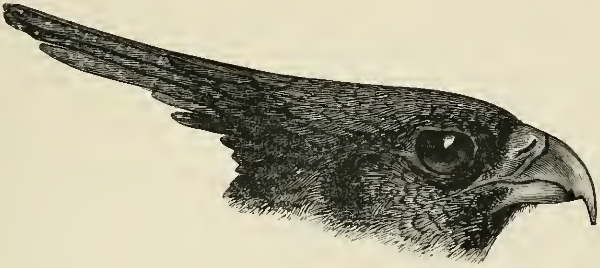

Fig. 99.—Head of *B. lophotes*, ¾.

1251. **Baza lophotes.** *The Black-crested Baza.*

Falco lophotes, *Temm. Pl. Col.* pl. 10 (1824).
Falco lathami, *J. E. Gray in Griff. An. King.* vi, p. 30 (1829).
Baza syama, *Hodgs. J. A. S. B.* v, p. 777 (1836); vi, p. 362.
Baza lophotes, *G. R. Gray, List Gen. B.* (1840) p. 4; *Jerdon, Madr. Jour. L. S.* xiii, pt. 2, p. 117; *Blyth, Cat.* p. 17; *Layard, A. M. N. H.* (2) xii, p. 102; *Horsf. & M. Cat.* i, p. 62; *Jerdon, B. I.* i, p. 111; *Hume, Rough Notes*, p. 337; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 93; *Sharpe, Cat. B. M.* i, p. 352; *Blyth, Birds Burm.* p. 60; *Inglis, S. F.* v, p. 15; *Hume & Dav. S. F.* vi, p. 24; *Hume, Cat.* no. 58; *Bingham, S. F.* viii, p. 191; ix, p. 145; *Legge, Birds Ceyl.* p. 98; *Oates, B. B.* ii, p. 208; *Hume & Cripps, S. F.* xi, p. 16; *Hauxwell, Jour. Bom. N. H. Soc.* vii, p. 403.

Coloration. Adult. Head and neck all round with long nuchal crest, and upper plumage generally, including the wings and tail, black; the inner portion of the scapulars and a band across the tertiaries white; some ferruginous red on the tertiaries and sometimes on the scapulars below the white, also on the outer webs of the later primaries and earlier secondaries; lower surface of quills, of larger under wing-coverts and of tail-feathers ashy, except the ends of the primaries and subterminal patch on some of the tail-feathers, which are blackish; a broad white gorget, followed by a black band more or less mixed with ferruginous; lower breast and long feathers on the flanks buff with ferruginous cross-bars; abdomen, posterior flanks, and lower tail-coverts black.

In younger birds there is much more ferruginous red and rather more white on the scapulars and quills, the upper surface and throat are duller black, the dark pectoral band behind the white gorget is mostly ferruginous red, and the red bands on the long feathers of the flanks are faint or wanting.

Bill horny plumbeous, tipped brownish above and whitish below; cere, legs, and feet dull leaden blue; irides purplish brown; claws horny (*Bingham*).

A male measures: length about 12·5; tail 5·5; wing 9; tarsus 1·1; mid-toe 1·2; bill from gape 1. Females are rather larger: length 13; wing 9·9.

Distribution. The base of the Himalayas as far west as Nepal, Assam, Cachar, Manipur, Arrakan, Tenasserim, Cochin China and the Malay Peninsula, and in Ceylon. This bird is also occasionally killed near Calcutta (according to Blyth in the rainy season); a specimen was once shot by Jerdon near Nellore. According to both Blyth and Jerdon, *B. lophotes* occurs sparingly throughout India, but it appears doubtful whether it has ever been met with near the west coast. Ball has not recorded it from Chutia Nagpur, and I never saw nor heard of it in the Central Provinces nor in the Bombay Presidency. It breeds in Assam and Burma; but is regarded by Legge as probably a cold-weather migrant in Ceylon.

Habits, &c. A denizen of high tree-forest, this, one of the most beautiful of Accipitrine birds, appears to be nowhere common. It is somewhat gregarious, has a sharp kite-like cry, and lives mainly on insects, though a lizard is said in one case to have been found in its stomach. Very little is known of the nidification: Mr. Cripps obtained a nest containing two young birds in Upper Assam on June 21st, and Colonel Bingham saw two adults feeding a young bird near the Thoungyin, Tenasserim, on August 11th; but quite recently Mr. Hauxwell obtained a nest with three eggs, also in the Thoungyin valley, on April 30th. The nest was about a foot in diameter, formed of twigs, with a slight central depression lined with fresh leaves. The eggs were hard-set, chalky white in colour, and broad ovals, measuring on an average 1·5 by 1·25.

This and other species of *Baza*, have the habit, when seated, of erecting their crests almost vertically.

1252. Baza jerdoni. *Blyth's Baza.*

? Falco lathami, *apud Tickell, J. A. S. B.* ii, p. 569 (1833), *nec Gray*; *Walden, Ibis,* 1876, p. 340.
Lophastur jerdoni, *Blyth, J. A. S. B.* xi, p. 464 (1842); xv, p. 4.
Aviceda sumatrensis, *Lafr. Rev. Zool.* 1848, p. 210.
Baza jerdoni, *Blyth, Cat.* p. 18; *Sharpe, Ibis,* 1893, p. 557.
Baza sumatrensis, *Sharpe, Cat. B. M.* i, p. 357, pl. xi, fig. 1; *Hume, S. F.* iii, p. 313; vii, p. 198 note; *Hume & Dav. S. F.* vi, p. 25; *Hume, Cat.* no. 58 bis; *Gurney, S. F.* viii, p. 444; *id. Ibis,* 1880, p. 471; *Oates, B. B.* ii, p. 209.
Baza incognita, *Hume, S. F.* iii, p. 314 (1875).

Coloration. Adult. Middle of crown and the long *Spizaëtus*-like crest black; forehead, supercilia, sides of neck, and hind-neck deep rufous with black streaks; lores grey with black bristles; upper parts from the neck dark brown; scapulars and upper tail-coverts with broad dark ends; quills and tail-feathers lighter brown, with broad blackish subterminal bands and narrower bands further up—4 or 5 altogether, including the last, on the quills, and 3 on the tail; lower surface of quills and tail-feathers whitish, and the dark bands, except the last two on the quills and the last on the tail, indistinct; chin, throat, and middle of breast white, with a narrow median black line on the throat; sides of throat and of upper breast rufous; lower breast and abdomen with broad alternating cross-bars of dark rufous and white.

Younger birds are paler throughout and have four distinct tail-bands; the head and neck are pale rufous above with black shaft-stripes, the dorsal feathers and upper wing-coverts have pale rufous edges; the crest-feathers have a long white tip. The median dark band to the throat is often wanting; the throat and breast are pale rufous with white edges to the feathers, and the lower breast and abdomen are banded with pale rufous. There is probably also a still younger (nestling) plumage, described by Blyth as resembling beneath that of a young *Accipiter*, and the "mesial dark streak, flanked with whitish, may be traced almost to the vent."

Length of a male 18·5; tail 9; wing 13; tarsus 1·45; mid-toe without claw 1·5; bill from gape 1·35.

Bill and cere blackish; irides bright yellow; legs and feet white slightly tinged with blue (*Hume*).

Distribution. Sikhim, Tenasserim, Malay Peninsula, and Sumatra. If Tickell's *Falco lathami* was this bird, as is very probable, a specimen was once obtained in South-western Bengal (Manbhoom). This is a very rare species, only one specimen has been recorded from Sikhim and one from Tenasserim.

1253. Baza ceylonensis. *Legge's Baza.*

Baza ceylonensis, *Legge, S. F.* iv, p. 247 (1876); *id. Birds Ceylon,* p. 94, pl. iii; *Whyte, S. F.* v, p. 202; *Hume, S. F.* vii, p. 151; *id. Cat.* no. 58 ter; *Gurney, S. F.* viii, p. 444; *id. Ibis,* 1880, p. 470; *Bligh, Ibis,* 1885, p. 362; 1887, p. 419.

This bird is closely allied to *B. jerdoni*, and appears to be distinguished only by having the upper breast and sides of the throat in adults rufescent grey instead of rufous, and by smaller size.

Young birds (nestlings) have pale rufous imperfect bands on the lower breast and abdomen.

Bill blackish leaden, cere brownish black; irides orange; legs and feet dull dirty white (*Bligh*).

Length 16·5 inches; tail 8; wing 12.

Distribution. The forests of the Central Province, Ceylon. A single young specimen was obtained by Mr. Darling in the Wynaad in October.

This also is a very rare species. When more specimens are available for comparison, it is highly probable that the present will prove to be only a small variety of *B. jerdoni*.

Habits, &c. Mr. Bligh in Ceylon found a large lizard in the stomach of one bird, and he observed two others evidently pairing in April, but they went away without nesting.

Genus **FALCO**, Linn., 1766.

This genus comprises the typical Falcons, birds that have, from time immemorial, been trained to hunt and capture various kinds of winged game and even mammals. They have great powers of flight, and are very courageous, most of them readily attacking and overcoming birds of size superior to their own. Their method of attack is to gain a higher position by superior powers of flight, and then to descend, or swoop, on their prey with great rapidity. The blow is always given with the hind claw, never, as represented by some painters, with the bill, and a mallard has been found with its back ripped from end to end by the force of a Peregrine's blow. The attack of a Falcon, which swoops from above, is quite different from that of a Goshawk or Sparrow-Hawk, which attacks from below or by surprise.

The wing in the Peregrine, Sháhin, and Barbary Falcons is pointed, the second quill longest, the first exceeding the third; but in *F. jugger* and *F. feldeggi* (the Lanner) the first and third quills are subequal, and in *F. cherrug* and *F. milvipes* the third is longer than the first. In the Peregrine and its allies the first primary alone has a notch on the inner web, but the second primary is occasionally notched in *F. jugger* and almost always in *F. cherrug*. In these characters of the wing the Hobbies resemble the Peregrine.

The bill is stout and strongly toothed inside the hooked tip, often with a blunt festoon behind the tooth; the nostril is circular with a central tubercle. Tarsus about equal to the middle toe without claw, or a little shorter, the upper part plumed in front, the naked portion covered with small hexagonal scales; the toes very long, covered with transverse scales above; claws curved and sharp. The tail is of moderate length, well rounded at the end.

Falcons have been variously arranged by different writers. The Hobbies are by some divided off as *Hypotriorchis*; and Sharpe has placed *F. cherrug* and *F. milvipes* with their allies the Gyrfalcons in the genus *Hierofalco*. I should have followed this arrangement but that *F. jugger* is exactly intermediate in structure, as it is in plumage, between the Peregrine group and *F. cherrug*. The genus *Falco* is found over the greater part of the world, and contains about 30 species, of which 8 are Indian.

Key to the Species.

a. Larger Falcons with ong toes; mid-toe without claw over 1·75*.
  a′. 1st primary longer than the 3rd; upper parts ashy grey in adults.
    a″. Cheek-stripe broader than eye; no nuchal collar
      a^3. Crown dark grey, breast very slightly rufous .... *F. peregrinus*, p. 413.
      b^3. Crown blackish, breast generally deep rufous .... *F. peregrinator*, p. 415.
    b″. Cheek-stripe narrow, a buff nuchal collar; head ashy grey or rufous .... *F. barbarus*, p. 417.
  b′. 1st primary subequal to 3rd or shorter; upper parts not ashy grey.
    c″. Adults not banded above.
      c^3. A distinct narrow cheek-stripe; middle tail-feathers entirely brown in adults .... *F. jugger*, p. 419.
      d^3. No cheek-stripe; middle tail-feathers usually brown, with white spots on both webs..... .... *F. cherrug*, p. 420.
    d″. Adults banded with rufous on back, wings, and tail.................... *F. milvipes*, p. 421.
b. Small Falcons with shorter toes; mid-toe without claw not over 1·5.
  c′. Breast white or buff with brown streaks. *F. subbuteo*, p. 422.
  d′. Breast deep rufous, unspotted in adults.. *F. severus*, p. 423.

1254. **Falco peregrinus.** *The Peregrine Falcon.*

Falco peregrinus, *Tunstall, Ornith. Brit.* p. 1 (1771); *Blyth, Cat.* p. 13; *Horsf. & M. Cat.* i, p. 16; *Jerdon, Madr. Jour. L. S.* x, p. 79; *id. B. I.* i, p. 21; *Blyth, Ibis*, 1866, p. 234; *Hume, Rough Notes*, p. 49; *Jerdon, Ibis*, 1871, p. 237; *Delmé Radcliffe, ibid.* p. 363; *A. Anderson, P. Z. S.* 1871, p. 677; 1875, p. 18; *Hume, S. F.* i, p. 151; ii, p. 140; iii, pp. 19, 442; iv, pp. 279, 460; xi, p. 2; *id. Cat.* no. 8; *Hume & Dav. S. F.* vi, p. 1; *Scully, S. F.* viii, p. 221; *Vidal, S. F.* ix, p. 29; *Butler, ibid.* p. 370; *Legge, Birds Ceyl.* p. 101; *Biddulph, Ibis*, 1881, p. 39; *Scully, ibid.* p. 416; *Gurney, Ibis*, 1882, p. 293; *Hume & Dav. S. F.* x, p. 333; *Oates, B. B.* ii, p. 214; *Barnes, Birds Bom.* p. 9.

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* The mid-toe is always measured from the joint at the distal end of the tarsus to the base of the claw, not from the division between the toes.

Falco communis, *Gm. Syst. Nat.* p. 270 (1788); *Sharpe, Cat. B. M.* i, p. 376; *Ball, S. F.* vii, p. 196.
Falco calidus, *Lath. Ind. Orn.* i, p. 41 (1790); *Blyth, Ibis,* 1863, p. 7.

Bhyri ♀, *Bhyri bacha* ♂, H.; *Bhyri dega,* Tel.; *Dega,* Yerkli; *Falcon* ♀, *Tiercel* ♂, of British Falconers.

Coloration. Adult. Above bluish grey, darker on the head and nape, pale on the rump and upper tail-coverts; feathers of the head and nape, the scapulars, and sometimes other parts of the upper plumage dark-shafted, and all feathers except those of the head and hind-neck with dark cross-bands; forehead whitish; a broad cheek-stripe from beneath the eye black; primaries blackish, the inner webs, except near the end, closely barred with white; secondaries ashy grey with darker cross-bands; tail dark grey or blackish, with numerous ashy-grey cross-bars, closer together and paler towards the base, extreme tip and borders near tip whitish; lower parts white with a rufous tinge, a few brown or black spots on the lower breast and middle of the abdomen, and narrow dark bars on the flanks, lower wing-coverts, thigh-coverts, and under tail-coverts.

Young birds are very dark brown above, the feathers edged with rufous, the buff bases of the feathers showing about the nape; the tail-feathers with about 6 transversely oval rufous spots on each web, forming imperfect cross-bars; primaries as in adults; cheek-stripe narrower; lower parts white, buff, or rufescent, spotted, except on the throat, with broad brown elongate median stripes, becoming broad spots on the flanks.

After the first moult Peregrines are brownish grey above and gradually acquire a pure slaty-grey back. The spots and bars on the lower parts are much broader at first and grow smaller and narrower with age, the drops on the breast become narrow lines and ultimately disappear altogether, the bands fade off the under tail-coverts, and in very old birds only small scattered specks remain on the abdomen and triangular markings on the thigh-coverts. The general tint of the lower surface varies from almost white to light rufous.

Bill bluish, black at tip; cere yellow; irides brown; legs and feet yellow.

Length of a female about 19; tail 7·5; wing 14·5; tarsus 2·1; mid-toe without claw 2·25; bill from gape 1·3. Males are considerably smaller: length about 16; wing 12·5.

Distribution. Almost worldwide. The Peregrine is a winter visitor to Southern Asia, and is found in suitable places during the winter throughout India, Ceylon, and Burma, and even in the Laccadive and Andaman Islands.

Habits, &c. The Peregrine is seldom found far from water, and is most common on the sea-coast or near rivers and large swamps, doubtless from the abundance of its prey, which consists largely of ducks and waders; pigeons, partridges, &c., are also captured by the Peregrine. It is the largest and most powerful of Indian

Falcons, and although it is not so much esteemed by Indian falconers as the next species, it is, or was formerly, trained in India to strike herons, storks, cranes, and even in some cases bustards. With one exception, observed by Layard near Jaffna in Ceylon, the Peregrine has not been recorded as breeding in India, accounts of its nesting in or near the Himalayas being doubtful. It generally lays 3 or 4 reddish eggs, speckled or blotched, in a stick nest on a cliff or sometimes on a tree.

1255. **Falco peregrinator.** *The Sháhin Falcon.*

Falco peregrinator, *Sunder. Physiogr. Sallskapets Tidsk.* i, p. 177, pl. 4 (1837); *id. A. M. N H.* xviii, p. 454 (1846); *Blyth, Cat.* p. 14; *Horsf. & M. Cat.* i, p. 18; *Layard, A. M. N. H.* (2) xii, p. 102; *Jerdon, B. I.* i, p. 25; *Hume, Rough Notes,* p. 55; *A. Anderson, P. Z. S.* 1871, p. 678; 1875, p. 18; *Jerdon, Ibis,* 1871, p. 237; *Delmé Radcliffe, ibid.* p. 363; *Sharpe, Cat. B. M.* i, p. 382; *Hume, N. & E.* p. 14; *Blyth & Wald. Birds Burm.* p. 58; *Walden, Ibis,* 1876, p. 342; *Hume, S. F.* v, p. 500; *id. Cat.* no. 9; *Hume & Dav. S. F.* vi, p. 1; *Davidson & Wend. S. F.* vii, p. 73; *Ball, ibid.* p. 196; *Legge, Birds Ceyl.* p. 106; *Butler, S. F.* ix, p. 370; *Reid, S. F.* x, p. 3; *Davison, ibid.* p. 333; *Oates, B. B.* ii, p. 216; *id. in Hume's N. & E.* 2nd ed. iii, p. 184; *Swinh. & Barnes, Ibis,* 1885, p. 55; *Barnes, Birds Bom.* p. 11; *id. Jour. Bom. N. H. Soc.* iii, p. 209.

Falco shaheen, *Jerdon, Madr. Jour. L. S.* x, p. 81 (1839); *id. Ill. Ind. Orn.* pls. 12, 28.

Falco sultaneus, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844).

Falco atriceps, *Hume, Rough Notes,* p. 58 (1869); *id. Ibis,* 1871, p. 24; *Jerdon, ibid.* p. 237; *A. Anderson, P. Z. S.* 1871, p. 679; *Hume, S. F.* vii, p. 326; *id. Cat.* no. 9 bis; *Gurney, S. F.* viii, p. 423; *id. Ibis,* 1882, p. 291, pl. x; *Oates in Hume's N. & E.* 2nd ed, iii, p. 185.

Sháhin Kohi ♀, *Kohila* ♂, H.; *Jawolum*, Tel.; *Wallur*, Tam.

Coloration. This Falcon is distinguished from the Peregrine at all ages by its darker and almost black head and nape, and by the deeper rufous of the lower surface, especially on the breast, abdomen, and lower wing-coverts. The colour of the lower parts varies, however, greatly; in some birds, especially those from Southern India, it is deep ferruginous or chestnut, whilst in many Himalayan birds it is scarcely darker than in some (exceptional) Peregrines. Except in very old birds there is almost always in the present species some rufous sprinkled over the nape, owing to there being a rufous band on the feathers between the black ends and the white bases. In old birds of *F. peregrinator* all markings disappear on the breast and abdomen, very narrow bars remaining on the flanks alone; and bars almost disappear on the pale ashy feathers of the back, rump, and scapulars.

In young birds of the year the whole upper surface is almost black, the feathers at first having rufous edges, which soon disappear by wear; there is some rufous on the nape; and the tail is marked with transverse oval rufous spots as in the Peregrine, but they are more numerous; the chin and throat are pale rufous and unspotted, the breast and abdomen marked with longitudinal drops, but the lower abdomen is sometimes unspotted.

The Himalayan birds have been separated by Hume as *F. atriceps*, chiefly on account of the cheek-stripe being fused, in the type specimen, into a black cap with the black of the crown and nape. This, however, is merely an individual character. The Himalayan race, as already remarked, is generally paler rufous below and the abdomen is greyer (though by no means so grey as it is represented in Gurney's figure in the 'Ibis'). The markings on the lower parts, too, are more persistent.

Bill slaty blue, dark at the tip; cere, orbits, and legs yellow; irides intense brown (*Jerdon*).

Length of a female about 18 inches; tail 6·5; wing 13; tarsus 2; mid-toe without claw 2·1; bill from gape 1·25: of a male, length 15; wing 11·5.

Distribution. A resident species in forests and well-wooded tracts throughout India, Ceylon, and Burma, but nowhere common and in general very rare. The original type was captured at sea in lat. 6° 20′ N. between Ceylon and Sumatra, 70 Swedish miles (460 British) from the Nicobar Islands, but no specimens have as yet been obtained in the Malay countries. West of India the Sháhin is said to be found in Afghanistan, and a rufous Falcon, perhaps the same, is well known by the name *Sháhin* to falconers in Persia. Mr. A. Anderson records the capture of a male midway between Bombay and Aden.

Habits, &c. This beautiful Falcon is chiefly found about rocky hills in or near forest; it preys on partridges, quails, and other birds, but especially on pigeons and parroquets. It is somewhat crepuscular, hunting in the early morning and late in the evening, and it has been observed to kill bats and goatsuckers. This is the Falcon most highly prized by Indian falconers, and the following account of the method of hawking with it is taken from Jerdon:—

"The Sháhin is always trained for what, in the language of Falconry, is called a standing gait, that is, is not slipped from the hand at the quarry, but made to hover and circle high in the air over the Falconer and party, and when the game is started, it then makes its swoop, which it does with amazing speed. It is indeed a beautiful sight to see this fine bird stoop on a partridge or florikin, which has been flushed at some considerable distance from it, as it often makes a wide circuit round the party. As soon as the Falcon observes the game which has been flushed, it makes two or three onward plunges in its direction, and then darts down obliquely with half closed wings on the devoted quarry, with more than the velocity of an arrow. The Sháhin is usually trained to stoop at partridges and florikin, also occasionally at the stone-plover and the jungle-fowl. It will not hover in the air so long as the Laggar, which, being of a more patient and docile disposition, will stay up above an hour."

In his description of the Laggar, Jerdon writes:—"Laggars, as well as Sháhins, are always caught after they have left the nest and have had some instruction by their parents, our native falconers considering them better than when taken from the nest, contrary, I believe, to the opinion of our English Adam Woodcocks"; and again in the account of *F. peregrinator* :—"The Sháhin and other Falcons are usually caught by what is called the *Eerwan*. This is a thin strip of cane of a length about equal to the expanse of wings of the bird sought for. The ends of the stick are smeared with bird-lime for several inches and a living bird is tied to the centre of it. On observing the hawk, the bird, which has its eyes sewn up to make it soar, is let loose, and the Falcon pounces on it and attempts to carry it off, when the ends of its wings strike the limed twig and it falls to the ground. The birds usually selected for this purpose are doves."

The nest of this Falcon, a mass of sticks, is always placed on a cliff: the eggs are laid about March and April, and resemble those of the Peregrine; they are brownish yellow to brick-red in colour, speckled and blotched with reddish brown, and they measure about 2 by 1·63.

1256. **Falco barbarus.** *The Barbary Falcon.*

Falco barbarus, *Linn. Syst. Nat.* i, p. 125 (1766); *Salvin, Ibis,* 1859, p. 184, pl. vi; *Hume, S. F.* i, p. 19; v, p. 140; *id. Cat.* no. 12 bis; *Sharpe, Cat. B. M.* i, p. 386; *Butler, S. F.* vii, p. 174; *id. Ibis,* 1889, p. 135; *Gurney, Ibis,* 1882, p. 305; 1887, p. 158; *id. S. F.* x, p. 480.

Falco pelegrinoides, *Temm. Pl. Col.* pl. 479 (1829).

Falco peregrinoides, *Schl., Susemihl, Abbild. Vög. Eur.* p. 39, pl. ix, fig. 1 (1839); *Hodgs. in Gray's Zool. Misc.* p. 81; *Gray, Cat. Mam. &c. Coll. Hodgson,* p. 44.

Falco babylonicus, *Gurney, Ibis,* 1861, p. 218, pl. vii; *Jerdon, B. I.* i, p. 32; *Hume, Rough Notes,* p. 79; *Jerdon, Ibis,* 1871, p. 240; *Delmé Radcl. ibid.* p. 366; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Sharpe, Cat. B. M.* i, p. 387; *Anderson, P. Z. S.* 1876, p. 311, pl. 23; 1878, p. 2; *Butler, S. F.* vii, p. 179; *Hume, ibid.* pp. 196, 329; x, p. 515; *id. Cat.* no. 12; *Gurney, Ibis,* 1882, p. 439; *Barnes, Birds Bom.* p. 13; *Littledale, Jour. Bom. N. H. Soc.* i, p. 194; *St. John, Ibis,* 1889, p. 151; *Philott, Ibis,* 1890, p. 467.

The Red-headed Lanner, Jerdon; *Sháhin, Safed Sháhin, Lál-sir Sháhin,* H. (Punjab).

Coloration. Forehead and lores buff; a varying portion of the middle of the crown behind the forehead more or less rufous; remainder of the crown ashy brown; all coronal feathers with dark shafts; feathers round eye and narrow cheek-stripe blackish, the latter mixed or bordered with rufous; sides of neck buff; broad nuchal collar rufous, often mixed with brown (occasionally nearly the whole crown and nape are light chestnut); upper parts ashy grey with dark or blackish cross-bars, the bars broad and predominating on the upper back and wing-coverts, less broad on the scapulars, narrow, and in old birds faint, on the rump and upper tail-coverts; primaries dark brown, closely banded with pale rufous on the inner webs except near the tips; secondaries ashy grey with dark cross-bands; tail with alternating bars of ashy grey and blackish grey, the former broader near the root, the latter near the end, tip whitish; chin and throat white or rufescent, rest of lower parts pale rufous, depth of tint varying; the breast in some with a few narrow dark shaft-lines, and the abdomen with small spots; the flanks and under wing-coverts with dark bars, but in old birds all markings on the breast and abdomen disappear, and only arrowhead-shaped marks remain on the flanks.

Young birds are dark brown above, the feathers with broad rufous edges which wear off after a time; scapulars with rufous spots; upper tail-coverts barred with rufous; forehead, middle of crown, and sometimes superciliary streaks, with the nuchal collar, buff or rufous, the collar mixed with brown; quills brown, barred as in adults; tail brown, with equal rufous bars at regular intervals; lower parts more or less rufous, pale and whitish on the throat, marked with elongate spots on the breast and abdomen, and broader spots on the flanks.

Bill bluish, black at the tip; cere, legs, and feet yellow; irides dark brown.

Length of females about 17 inches; tail 6·5; wing 12·5; tarsus 1·9; mid-toe without claw 2; bill from gape 1·1: length of males 15; tail 5·75; wing 11.

Distribution. Northern and North-eastern Africa, South-western and Central Asia, ranging as a winter visitor into North-western India as far south as the Nerbudda and as far east as Oude. A single specimen was obtained near Raipur, C.P., by Mr. Thompson. The locality Nepal in the British Museum Catalogue is due, as in many other cases, to all specimens presented by Mr. Hodgson having been thus labelled. The birds were probably trained Falcons, brought to Nepal tame.

There is no difference whatever in plumage between *F. barbarus* and *F. babylonicus*, as is clearly shown by the series in the British Museum, but some (not all) Indian females are larger than the few N. African specimens of the same sex hitherto measured. Dr. Sharpe tells me he has already come to the same conclusion as to the identity of these birds.

Habits, &c. The Barbary Falcon ranks as one of the Peregrine group and is, for its size, a powerful bird, killing partridges, &c., with ease. According to Jerdon it has been trained to take mallard and other birds. It is found in open dry country and breeds in cliffs. The eggs resemble the Peregrine's, but are rather smaller. None have been found in India, but this Falcon breeds in the ranges west and north-west of the Punjab; two young birds were found in a nest in the Gúmal Pass near Dera Ismail Khan on May 13th by Lieut. Philott.

1257. **Falco jugger.** *The Laggar Falcon.*

Falco jugger, *J. E. Gray in Hardw. Ill. Ind. Zool.* ii, pl. 26 (1833–34); *Blyth, Cat.* p. 13; *Horsf. & M. Cat.* i, p. 20; *Jerdon, B. I.* i, p. 30; *Hume, Rough Notes,* p. 70; *A. Anderson, P. Z. S.* 1871, p. 680; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Hume, S. F.* i, p. 156; *Sharpe, Cat. B. M.* i, p. 393; *Butler, S. F.* iii, p. 443; ix, p. 370; *Davidson & Wend. S. F.* vii, p. 73; *Ball, ibid.* p. 196; *Cripps, ibid.* p. 241; *Hume, Cat.* no. 11; *Scully, S. F.* viii, p. 222; *Reid, S. F.* x, p. 3; *Barnes, Birds Bom.* p. 12; *id. Jour. Bom. N. H. Soc.* iii, p. 209; *Hume, S. F.* xi, p. 3; *St. John, Ibis,* 1889, p. 151; *Oates in Hume's N. & E.* 2nd ed. iii, p. 186.

Falco luggur, *Jerdon, Madr. Jour. L. S.* x, p. 80 (1839); *id. Ill. Ind. Orn.* pl. xliv.

Falco thermophilus, *Hodgson in Gray's Zool. Misc.* p. 81, descr. nullâ.

Laggar ♀, *Jaggar* ♂, H.; *Lagadu,* Tel.

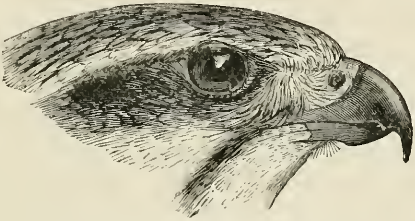

Fig. 100.—Head of *F. jugger*, $\frac{3}{4}$.

Coloration. Adult. Forehead, lores, and supercilia white, with dark streaks; crown and nape brown, with broad rufous edges to the feathers; a streak running back above the ear-coverts, and a moustachial band from the gape sometimes continued to the eye, with some feathers round the orbit dark brown; rest of sides of head white, with a few dark shafts beneath the eye; upper plumage from the nape brown with an ashy tinge; quills the same; inner webs of primaries, except near the end, with broad white bars; tail brown, middle feathers unbarred and pale-tipped, outer feathers with whitish bars on the inner webs and white tips; lower parts white, a few dark streaks, wanting in very old birds, on the breast, and spots on the abdomen; flanks and outer thigh-coverts chiefly brown.

Young birds are brown almost throughout, the chin and throat white, and some white on the forehead, sides of head, breast, and lower tail-coverts, buff instead of white on quills and inner webs of tail-feathers. There is a gradual disappearance of the brown on the lower parts with successive moults.

Bill greyish blue, the tip blackish; cere yellow in adults, greenish grey in young birds; irides dark brown; legs and feet yellow, pale plumbeous to dull greenish grey in the young (*Hume*).

Length of female about 18 inches; tail 8; wing 14; tarsus 2; mid-toe without claw 1·8; bill from gape 1·25: of a male, length 16; tail 7·5; wing 12·5.

Distribution. Throughout India in suitable (open or cultivated) country, from the lower Himalayas to Southern Madras, and from Sind to Cachar. A specimen was obtained by Hume in Manipur, but this Falcon has not been observed in Assam nor in Burma. It is found in Baluchistan about Khelat and Quetta, but has not been met with farther west. It is rare to the southward, and does not occur in Ceylon. It is seldom met with in forest regions such as the Malabar coast and South-western Bengal, and is particularly common in the upper Gangetic plain, and far from rare in parts of the Punjab and Rajputana.

Habits, &c. Jerdon says—"Whilst the *Bhyri* prefers the sea-coast and the neighbourhood of lakes, rivers, and wet cultivation, and the *Shâhin* delights in hilly and wooded regions, the *Laggar* on the contrary frequents open dry plains and vicinity of cultivation." "In a wild state it preys on a great variety of small birds, often snatching up a chicken, even in the midst of a cantonment." Formerly it was trained to hunt crows, the smaller herons, partridges, and florican, but very few Falcons are now trained in India, and this species is now rarely, if ever, captured for the purpose. The nest of the Laggar is sometimes on a tree, very often a pipal (*Ficus religiosa*), sometimes on a cliff or on a building, and in many cases the Falcon takes possession of an old nest of a kite, eagle, or vulture, not even relining it. The breeding-season is in January, February, and March. The usual number of eggs is four; they are reddish or brownish, speckled and spotted all over with a darker and richer shade of the same, and measure about 2·01 by 1·57.

1258. **Falco cherrug.** *The Saker or Cherrug Falcon.*

Falco sacer, *apud Gm. Syst. Nat.* i, p. 273 (1788); *Jerdon, B. I.* i, p. 29; iii, p. 869; *id. Ibis*, 1871, p. 238; *Hume, Rough Notes*, p. 62; *Delmé Radcl. Ibis*, 1871, p. 365; *Hume, S. F.* i, p. 152; *id. Cat.* no. 10; *Anderson, P. Z. S.* 1876, p. 778; *Scully, Ibis*, 1881, p. 416; *Gurney, Ibis*, 1882, p. 444; *Barnes, Birds Bom.* p. 12; *nec Forster, Phil. Trans.* lxii, p. 383 (1772).
Falco cherrug, *J. E. Gray in Hardw. Ill. Ind. Zool.* ii, pl. 25 (1833–34).
Hierofalco saker, *Sharpe, Cat. B. M.* i, p. 417; *id. Yark. Miss., Aves*, p. 149, pls. xvi–xix; *Murray, Vert. Zool. Sind*, p. 66.

Charg ♀, *Chargela* ♂, H.

Coloration. Adult. Crown and nape white (the crown sometimes pale rufous), with blackish shaft-stripes, which are broader on the nape; lores and sides of head white, with scattered dark streaks; no cheek-stripe from the eye, but sometimes a broken moustachial stripe from the gape; ear-coverts brown, streaked darker; upper parts brown throughout, the feathers with rufous or tawny margins, and frequently a few rufous spots forming imperfect bars on the scapulars and larger wing-coverts; quills brown, paler beneath; primaries broadly barred with white on the inner webs, the bars widening and generally coalescing towards the inner border; secondaries with smaller white markings, or with spots, or uniformly coloured brown; tail-feathers brown, with a whitish tip, generally with round or oval white spots on both webs, but occasionally the middle feathers are unspotted (as in *F. jugger*), and sometimes the spots become on the outer rectrices imperfect bands interrupted at the shaft; lower parts white, with large elongate brown spots on the breast and abdomen and larger spots on the flanks and thigh-coverts; with age the spots grow smaller, rounder, and more scattered, especially on the breast.

Young birds do not differ greatly from old, except that the brown spots on the lower plumage are much more developed, and cover the greater part of the breast and abdomen; the head, too, is sometimes brown, and a moustachial stripe is usually well marked; the middle tail-feathers are often unspotted at first.

Bill pearly white, tipped black; cere, legs, and feet dull yellow in old birds, greyish green in the young; irides dark brown, or brownish yellow or yellow.

Length of a female about 22; tail 9; wing 15·5; tarsus 2·2; mid-toe without claw 2; bill from gape 1·45: length of a male 19·5; tail 8; wing 14·5.

Distribution. From Eastern and South-eastern Europe, through Central Asia to China. This Falcon visits the Punjab in the cold season, and is common west of the Indus and also in the Sirsa district, a few birds straying into Sind and the N.W. Provinces. The locality Nepal, in the British Museum Catalogue, is probably due to a mistake, as in the similar case of *F. barbarus*.

Habits, &c. This is distinctly a desert species, and, according to Jerdon, it feeds in the Punjab very much on *Uromastix hardwickii*, a lizard only found in dry and barren regions. Many Saker Falcons are captured and trained to strike hares and even gazelles, cranes, and Houbara bustard, herons, and kites (*Milvus govinda*). It may be recollected that in France and Great Britain the Kite (*M. ictinus*) was of old the grandest quarry for the best Falcons (Peregrines). The Saker is not known to breed in India. It usually nests on trees, and lays four eggs, slightly elongate, but of the usual Falcon type.

1259. **Falco milvipes.** *The Shanghar Falcon.*

Falco milvipes, *Hodgs. in Gray's Zool. Misc.* p. 81 (1844), descr. nullâ; *Jerdon, Ibis*, 1871, p. 240; *Gurney, Ibis*, 1882, p. 445.
Falco hendersoni, *Hume, Ibis*, 1871, p. 407; *Hume and Henders. Lah. to Yark.* p. 171, pl. i; *Hume, S. F.* ii, p. 530; viii, p. 186; *id. Cat.* no. 10 bis; *Scully, S. F.* iv, p. 117; *Brooks, S. F.* v, p. 48.
Hierofalco hendersoni, *Hume, S. F.* vii, p. 327.
Hierofalco milvipes, *Sharpe, Yark. Miss., Aves*, pp. 11, 150.

Coloration. Adult. Crown brown, the feathers with broad rufous margins, still broader and mixed with buff on the nape; cheek-stripe black, ill-defined; lores and forehead whitish. Upper plumage and tail brown, with rufous cross-bars throughout (somewhat as in a female Kestrel); inner webs of primaries mostly covered by confluent white bars, except near the tips of the feathers; lower parts buff or white, with spots on the breast, abdomen, and flanks, those on the breast and middle of the abdomen disappearing in old birds.

In young birds the rufous bars are irregular and ill-marked, and those on the tail more or less imperfect. In this stage *F. milvipes* is very like *F. cherrug*, but may generally be distinguished by some of the bars going quite across the tail-feathers. A nestling from Tibet in the Hume collection, attributed to this species, has, however, the tail absolutely unbarred.

Bill bluish, black at the tip; cere, legs, and feet yellow.

Length of female about 23; tail 9; wing 16; tarsus 2·2; mid-toe without claw 2; bill from gape 1·35: length of male 20; tail 7½; wing 14.

Distribution. Tibet and part of Mongolia. A few birds have been obtained in the Punjab at times, and one by Sir O. St. John at Quetta.

1260. **Falco subbuteo.** *The Hobby.*

Falco subbuteo, *Linn. Syst. Nat.* i, p. 127 (1766); *Sharpe, Cat. B. M.* i, p. 395; *Hume & Ball, S. F.* vii, p. 197; *Cripps, ibid.* p. 241; *Hume, Cat.* no. 13; *Doig, S. F.* ix, p. 282; *Butler, ibid.* p. 370; *Biddulph, Ibis,* 1881, p. 39; *Scully, ibid.* p. 417; *Reid, S. F.* x, p. 4; *Barnes, Birds Bom.* p. 16; *Hume, S. F.* xi, p. 3.

Hypotriorchis subbuteo, *Boie, Isis,* 1826, p. 970; *Blyth, Cat.* p. 15; *Horsf. & M. Cat.* i, p. 23; *Jerdon, B. I.* i, p. 33; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 13; *Hume, Rough Notes,* p. 85; *Brooks, S. F.* iii, p. 228; *Butler, ibid.* p. 443; *Hume & Inglis, S. F.* v, p. 4.

Lithofalco subbuteo, *King, J. A. S. B.* xxxvii, pt. 2, p. 213.

Morassani, Oude.

Coloration. Adults. Upper parts dark slaty grey, shafts of feathers darker, head very dark and blackish; lores, forehead, and supercilia whitish; cheek-stripe and sides of head beneath and behind the eye blackish; some buff on the hind-neck, forming a partial collar; quills blackish, barred on the basal portion of the inner webs with rufous; tail slaty grey, the outer feathers barred with rufous on the inner webs; chin, throat, and sides of neck buff or white; breast and upper abdomen the same, with a large blackish-brown streak down each feather; lower abdomen, thigh-coverts, and under tail-coverts varying from pale rufous to rich ferruginous.

Young birds are greyish or brownish black above, with fulvous borders to all feathers; lower parts pale rufous, with broad blackish-brown streaks throughout; tail tipped with rufous, otherwise like the adults. The tail often remains brown after the upper plumage generally is slaty grey.

Bill bluish, with a black tip; lower base of bill, cere, and orbital skin greenish yellow; irides intense brown; lege orange (*Cripps*).

Length of female about 13; tail 6; wing 11; tarsus 1·4; mid-toe without claw 1·25; bill from gape ·8: wing of male 10·25, tail 5·5.

Distribution. All Europe and Northern and Central Asia, migrating to Africa and India in the winter. The Hobby probably breeds in the Himalayas, where it is commonly found, and it is a summer visitor to Gilgit; in the plains of India it has only been met with occasionally, chiefly to the northward, the most southern reported localities being Jálna (*Jerdon*), Belgaum (*Butler*), and Raipur. It has been obtained in Cachar (*Inglis*) and Manipur (*Hume*), but not in Burma nor in Ceylon.

Habits, &c. The Hobby feeds much on insects, especially dragonflies, and is often crepuscular in its movements; it is very swift, and was formerly a favourite with Falconers for hawking small birds, such as quails, larks, &c., and, in India, hoopoes and king-crows. The nest has not been taken in India; it is placed on a tree, and the eggs are of the usual Falcon type, reddish, speckled darker; they are usually 3 or 4 in number, and measure about 1·7 by 1·3.

1261. **Falco severus.** *The Indian Hobby.*

Falco severus, *Horsf. Tr. Linn. Soc.* xiii, p. 135 (1821); *Delmé Radcl. Ibis,* 1871, p. 366; *Sharpe, Cat. B. M.* i, p. 397; *Hume & Dav. S. F.* vi, p. 2; *Hume, Cat.* no. 14; *Legge, Birds Ceyl.* p. 110; *Reid, S. F.* x, p. 4; *Davison, ibid.* p. 333; *Butler, ibid.* p. 524; *Oates, B. B.* ii, p. 216; *Hume, S. F.* xi, p. 3.

Falco rufipedoides, *Hodgs. Calc. Jour. N. H.* iv, p. 283 (1844).

Hypotriorchis severus, *Blyth, Cat.* p. 15; *Horsf. & M. Cat.* i, p. 22; *Jerdon, B. I.* i, p. 34; *Blyth, Ibis,* 1866, p. 237; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 13; *Hume, Rough Notes,* p. 87; *Blyth, Birds Burm.* p. 59; *Hume & Bourd. S. F.* iv, p. 354.

Dhutar ♂, *Dhuti* ♀, H.

Coloration. Crown and sides of head, including cheeks to below the gape, and the hind-neck black, which passes on the upper back into the dark slaty grey with black shafts of the upper parts generally; quills and larger coverts black, the inner webs of the quills with oval transverse rufous spots or bars on basal two-thirds of the primaries and almost throughout the secondaries; tail slaty grey above in old birds with one black subterminal cross-band, in younger birds blackish above with grey cross-bands, brown beneath with paler bands, which become light rufous on the inner webs of the outer rectrices; chin, throat, and sides of neck white tinged with rufous; rest of lower parts, including the under wing-coverts, deep ferruginous red.

Young birds are brownish black above, with light rufous edges, broadest on the secondaries, upper tail-coverts, and tail-feathers; a few rufous feathers scattered over the nape; breast, abdomen, and under wing-coverts deep rufous with black spots.

Bill plumbeous; irides deep brown; cere, gape, and orbital skin lemon-yellow; legs and feet deep yellow (*Cripps*).

Length of a female about 11·5; tail 4·75; wing 9·8; tarsus 1·35; mid-toe without claw 1·35; bill from gape ·9: length of a male 10·5; tail 4·25; wing 9.

Distribution. The Himalayas as far west as Kúlú, at moderate elevations, also Travancore and probably the Nilgiris, and Ceylon, but, so far as is known, only in the cold season. This Hobby is believed to occur occasionally in Oude, and it has been shot near Calcutta. It is recorded from Assam, Cachar, and Manipur, but has not been obtained in Burma recently, though Blyth quotes it from Tenasserim, which it must inhabit, as it occurs throughout the Malay Archipelago to New Guinea and New Britain.

Habits, &c. Like other Hobbies, the present species is crepuscular, a circumstance which probably accounts for its being so seldom seen; it also resembles the Common Hobby in feeding largely, perhaps chiefly, on insects. The nidification is unknown. According to Jerdon this Hobby is said to breed on trees, and Mr. R. Thompson inferred that a female he saw in the lower ranges of Kumaun had young in June, because he saw her carry away a small bird as if to her nest.

Blyth has called attention to the curious fact that this Falcon and the Sháhin, both resident tropical species, differ from the migratory Hobby and Peregrine in precisely similar details of coloration, and that some Swallows, resident in the tropics, are similarly distinguished from their migratory allies by darker and more rufous colouring.

Genus **ERYTHROPUS**, Brehm, 1828.

The two beautiful Falcons belonging to the present genus are commonly classed with the Kestrels, from which, however, they differ completely in plumage and considerably in structure. The male when adult is almost throughout dark grey, whilst the female is coloured like a Hobby, not at all like a Kestrel.

The wing is pointed, 2nd quill longest, 1st much exceeding the 3rd, as in Peregrines; foot small, but proportionally longer than in Kestrels, the mid-toe being but little shorter than the tarsus; tail rounded, not graduated as in *Tinnunculus*.

Only two species are known, one of which occurs in India.

1262. **Erythropus amurensis.** *The Eastern Red-legged Falcon.*

Tinnunculus vespertinus, *apud Blyth, Cat.* i, p. 16; *nec* Falco vespertinus, *L.*

Erythropus vespertinus, *apud Horsf. & M. Cat.* i, p. 14; *Jerdon, B. I.* i, p. 40; *Blyth, Ibis,* 1866, p. 238; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 13; *Hume, Rough Notes,* p. 106; *Jerdon, Ibis,* 1871, p. 243; *Legge, S. F.* i, p. 487; *Hume, S. F.* iii, p. 22; *Sharpe, ibid.* p. 303; *Hume, Cat.* no. 19.

Falco vespertinus, var. amurensis, *Radde, Reis. Süd. O.-Sibir.* ii, p. 102, pl. 1. fig. 2 (1863).

Erythropus amurensis, *Gurney, Ibis,* 1868, p. 41, pl. ii; 1882, p. 147; *Hume, S. F.* ii, p. 527; iii, p. 327; *Hume & Inglis, S. F.* v, p. 6.

Cerchneis amurensis, *Sharpe, Cat. B. M.* i, p. 445; *Legge, S. F.* iii, p. 362; *Hume, Cat.* no. 19 bis; *Legge, Birds Ceyl.* p. 119; *Inglis, S. F.* ix, p. 243; *Butler, ibid.* p. 371; *Hume, S. F.* xi, p. 5.

Tinnunculus amurensis, *Oates, B. B.* ii, p. 219.
Cerchneis vespertina, *Hume, Cat.* no. 19; *Barnes, Birds Bom.* p. 20.

Red-legged Falcon, Jerdon.

Coloration. Adult male. Upper parts and tail dark slaty grey, blackish on the head, nape, back, and scapulars, quills washed outside with silvery grey; cheeks sooty black, ear-coverts paler; lower surface from chin to abdomen ashy grey; lower abdomen and under tail-coverts deep ferruginous red; wing-lining and axillaries pure white, lower surface of quills black throughout.

Adult female. Above slaty grey, brownish on the head, nape, and upper back, paler on the rump and tail: feathers of the head and nape dark-shafted, all others barred with black bands, especially on the rump and tail, subterminal band on tail broader; a cheek-stripe, feathers below the eye, and a band running back from it black; primaries blackish, with oval white spots forming bars on inner webs, except near the tips; lower parts to the abdomen including the ear-coverts creamy white or pale rufous; breast with elongate black spots that pass into arrow-head or heart-shaped markings and bars on the flanks and upper abdomen; lower abdomen and lower tail-coverts rufous, not spotted; wing-lining white with brown spots; axillaries barred white and dark brown.

Young birds are like the female, but the head is much browner, and the feathers of the mantle have broad rufous borders; there is also an imperfect buff nuchal collar.

Bill fleshy red with a dusky tip, cere deep orange-red, orbital skin orange-yellow; legs deep orange-red, claws flesh-coloured (*Jerdon*); irides hazel (*Gurney*).

Length of a male 11·5; tail 5; wing 9; tarsus 1·1; mid-toe 1; bill from gape ·75. Females are a little larger on an average.

Distribution. A migratory bird, breeding in North China in summer and wintering partly in India and Burma, but principally in Eastern Africa. This Falcon has been chiefly observed, in India, in Kumaun, Sikhim, Bengal, and Cachar, towards the latter part of the monsoon, when it is migrating southward; only occasional occurrences have been recorded in Pegu, the Western Himalayas, the Deccan, the Nilgiris, the Carnatic, and Ceylon.

E. vespertinus, the European Red-legged Falcon, to which the first few specimens of *E. amurensis* found in India were referred, is easily distinguished, the male by having a dark grey wing-lining instead of a white one, the female by its rufous head and immaculate breast, and the young birds by having the crown rufous instead of brown. So far as is known the true *E. vespertinus* has not been found in India.

Habits, &c. The present species is highly gregarious and mainly insectivorous. It migrates in large flocks, which roost together at night. It breeds in China in magpies' nests.

Genus **ÆSALON**, Kaup, 1829.

In the Merlins and their allies which constitute the genus *Æsalon*, the wing is even more rounded than in the Jerfalcons (*Hierofalco*), the second and third primaries being longest and subequal, whilst the first is considerably shorter, being approximately equal to the fourth. The first two quills are always notched on the inner webs. Lateral toes unequal as in typical Falcons.

All the species are small, and consist of the Merlin and its American ally and the Indian and African Red-headed Merlins, which are by some placed in a separate genus, *Chicquera*.

Key to the Species.

a. Crown grey or brown dark-shafted..........	*Æ. regulus*, p. 426.
b. Crown chestnut..........................	*Æ. chicquera*, p. 427.

1263. **Æsalon regulus.** *The Merlin.*

Falco æsalon, *Tunstall, Ornith. Brit.* p. 1 (1771); *Hume, Cat.* no. 15; *Biddulph, Ibis,* 1881, p. 39; *Scully, ibid.* p. 417; *C. Swinhoe, Ibis,* 1882, p. 99; *Barnes, Birds Bom.* p. 17; *St. John, Ibis,* 1889, p. 151.

Falco regulus, *Pall. Reis. Russ. Reichs,* ii, p. 707 (1773); *Sharpe, Cat. B. M.* i, p. 406.

Æsalon regulus, *Blyth, Ibis,* 1863, p. 9; *Gurney, Ibis,* 1882, p. 160.

Hypotriorchis æsalon, *Gray, Gen. B.* i, p. 20; *Horsf. & M. Cat.* i, p. 24; *Jerdon, B. I.* i, p. 35; *Hume, S. F.* i, p. 157.

Lithofalco æsalon, *Blyth, Ibis,* 1866, p. 238; *Hume, Rough Notes,* p. 89; *Jerdon, Ibis,* 1871, p. 242.

Dourai ♀, *Dourela* ♂, H.; *Retal turumti, Regi,* Punjab.

Coloration. Adult male. Forehead, lores, and sides of the head whitish with dark shaft-streaks; supercilia rufescent, becoming rufous behind and running back to the rufous nuchal collar across the neck; crown of head and upper parts clear bluish grey, varying in depth of tint from quite pale to very dark, the feathers dark-shafted throughout, even on the rufous collar; quills blackish, the inner webs barred with white except at the end of the primaries, and the outer webs tinged with bluish grey towards the base outside, inner secondaries coloured like the back; tail bluish grey tinged white, with a broad black cross-band just before the white tip, and generally traces of other black bands; throat white; rest of lower parts and sides of the neck whitish, somewhat irregularly tinged with rufous, and with dark brown shaft-stripes that are narrowest in old birds.

Female. Very old females resemble the male, but these are of very rare occurrence: usually the female differs from the male in having the head dull rufous or brown, dark-shafted; the upper parts brown with more or less of a grey tinge and often with rufous edges to the feathers; the tail barred throughout, and the quills with rufous cross-bands; the nuchal collar and lower parts less rufous than in the male, and the breast and upper abdomen with much broader brown shaft-stripes, these frequently occupying more space than the white borders.

Young birds of both sexes resemble the female, but are browner with broader rufous edges to the feathers of the upper parts, with the crown rufous (dark-shafted), and with the tail alternately banded brown and white; the quills too are barred almost across.

Bill dark slaty grey, greenish at base of lower mandible; cere, legs, and feet yellow; irides brown (*Hume*).

Length of females about 12; tail 5·5; wing 8·75; tarsus 1·5; mid-toe 1·3; bill from gape ·8: length of a male 11, wing 8.

Distribution. The Palæarctic region. The Merlin is found in the Western Himalayas, the Punjab and Sind, but only, so far as is known, in winter. It also visits Gilgit at the same season, and probably breeds farther north.

Habits, &c. For courage and speed no Falcon ranks before the Merlin, and, despite its small size, it was formerly a great favourite with Falconers, both in Europe and in Asia. It lives chiefly on small birds, and nests on the ground, laying 4 to 6 brick-red eggs of the usual falcon type.

1264. **Æsalon chicquera.** *The Turumti or Red-headed Merlin.*

Falco chicquera, *Daud. Traité*, ii, p. 121 (1800); *Blyth, Cat.* p. 14; *Sharpe, Cat. B. M.* i, p. 403; *Davidson & Wend. S. F.* vii, p. 73; *Ball, ibid.* p. 197; *Cripps, ibid.* p. 242; *Hume, Cat.* no. 16; *Scully, S. F.* viii, p. 222; *Legge, Birds Ceyl.* p. 110; *Vidal, S. F.* ix, p. 29; *Butler, ibid.* p. 370; *Hume & Inglis, ibid.* p. 242; *Reid, S. F.* x, p. 4; *Hume, ibid.* p. 334; *Taylor, ibid.* p. 454; *Barnes, Birds Bom.* p. 17; *id. Jour. Bom. N. H. Soc.* iii, p. 210; *Hume, S. F.* xi, p. 4; *Oates in Hume's N. &E.* 2nd ed. iii, p. 192.

Hypotriorchis chicquera, *Gray, Gen. B.* i, p. 20; *Horsf. & M. Cat.* i, p. 23; *Jerdon, B. I.* i, p. 36; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 13; xli, pt. 2, p. 230; *Butler, S. F.* iii, p. 444; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 192.

Chicquera typus, *Bp. Rev. Mag. Zool.* 1854, p. 535; *Hume, S. F.* i, p. 157; *Gurney, Ibis*, 1882, p. 161.

Turumtia chicquera, *Blyth, Ibis*, 1863, p. 9.

Lithofalco chicquera, *Blyth, Ibis*, 1866, p. 248; *Hume, Rough Notes*, p. 91; *A. Anderson, P. Z. S.* 1871, p. 681.

Turumti, Turumtari ♀, H.; *Chetwa* ♂, Hindi; *Jellaganta, Jelgadda*, Tel.; *Jelkat*, Yerkli.

Coloration. Adult. Crown and nape with sides of neck, ear-coverts, and a narrow cheek-stripe chestnut; narrow forehead and lores whitish; a few bristly feathers round the eye black, especially at the origin of the cheek-stripe; upper parts from the neck ashy grey; the scapulars, secondaries, and wing-coverts more or less barred with brown; a little chestnut along the anterior edge of the wing; primaries blackish brown, closely barred with white on the inner webs, except at the tips; tail grey with narrow black bars, a very broad black band close to the end, and a white tip; lower parts white, with a few short longitudinal blackish streaks on the breast and bars on the flanks and abdomen.

With age the black bars on both the upper and lower surface become narrow and tend to disappear. In young birds all the grey feathers of the upper plumage are barred with black, the crown and nape are dusky rufous, with dark mesial lines to the feathers, and the lower parts are tinged rusty. These details are from Jerdon, and precisely agree with those of the young *Æ. ruficollis,* an African species very closely allied to *Æ. chicquera.* Of the Turumti itself, strange to say, there is no young skin in the British Museum, though there must be more than 50 adults.

Bill bluish black, greenish yellow at the base; cere, orbital skin, and legs yellow; irides rather light brown (*Hume*).

Length of female about 14; tail 6; wing 9; tarsus 1·6; mid-toe 1·5; bill from gape ·9.

Distribution. This Falcon is peculiar to India, being found from the Himalayas to Southern India, and it probably occurs occasionally in Ceylon. It ranges to the Punjab and Sind, and to the eastward as far as Sylhet and Cachar. It has not been observed in Assam, but Hume once saw a single individual in Manipur.

Habits, &c. This pretty little Falcon is not a bird of forests, but is chiefly found in cultivated districts where there are gardens and groves of trees. It lives mainly on small birds, and has been occasionally captured and trained, its principal quarry being the Roller (*Coracias indica*). The nest is always on a tree and is a neat structure of twigs lined with fibres; 4 eggs are usually laid between January and May, generally about March. The eggs are brownish red mottled and blotched with a darker red, and measure about 1·66 by 1·27.

Chicquera, as Jerdon points out, is a corrupt form of *Shikra,* the name of *Astur badius.* Similarly the common Indian name for a Kite, *Chil,* has been wrongly given to the Crested Serpent-Eagle, *Spilornis cheela.*

Genus **TINNUNCULUS**, Vieillot, 1807.

The Kestrels differ from the true Falcons by having a shorter bill and a much smaller and weaker foot, the middle toe without the claw being only $\frac{2}{3}$ to $\frac{3}{4}$ the length of the tarsus. The tail is longer and the feathers graduated, the outer rectrices 1 to $1\frac{1}{2}$ inches shorter than the middle pair, and the wing is shorter. The sexes differ, and the females and young have the upper parts banded black and rufous.

Key to the Species.

a. Claws black .... *T. alaudarius,* p. 428.
b. Claws whitish or pale horny .... *T. cenchris,* p. 430.

1265. **Tinnunculus alaudarius.** *The Kestrel.*

Falco tinnunculus, *Linn. Syst. Nat.* i, p. 127 (1766); *Wardl. Ramsay, Ibis,* 1880, p. 47.
Falco alaudarius, *Gm. Syst. Nat.* i, p. 279 (1788).

Cerchneis tinnunculus, *Boie, Isis,* 1828, p. 314; *Sharpe, Cat. B. M.* i, p. 425; *Hume & Dav. S. F.* vi, p. 3; *Cripps, S. F.* vii, p. 242; *Hume, Cat.* no. 17; *Scully, S. F.* viii, p. 223; *Legge, Birds Ceyl.* p. 114; *Barnes, S. F.* ix, p. 214; *Butler, ibid.* p. 370; *Biddulph, Ibis,* 1881, p. 40; *Scully, ibid.* p. 418; *Reid, S. F.* x, p. 5; *Davison, ibid.* p. 334; *Hume, S. F.* xi, p. 4; *Barnes, Birds Bom.* p. 18; *id. Jour. Bom. N. H. Soc.* iii, p. 211.

Tinnunculus alaudarius, *Blyth, Cat.* p. 15; *Horsf. & M. Cat.* i, p. 13; *Jerdon, B. I.* i, p. 38; *Hume, Rough Notes,* p. 96; *Blanf. J. A. S. B.* xli, pt. 2, p. 41; *Cock & Marsh. S. F.* i, p. 349; *Brooks, S. F.* iii, p. 228; *Hume & Bourd. S. F.* iv, p. 355; *Butler, S. F.* v, p. 226: *Wardl. Rams. Ibis,* 1877, p. 453; *Gurney, Ibis,* 1881, p. 456; *Oates, B. B.* ii, p. 217; *id. in Hume's N. & E.* 2nd ed. iii, p. 195.

Falco interstinctus, *McClell. P. Z. S.* 1839, p. 154.

Tinnunculus saturatus, *Blyth, J. A. S. B.* xxviii, p. 277; *id. Ibis,* 1866, p. 238; *Blyth & Wald. Birds Burm.* p. 59; *Hume, S. F* v, p. 129: vi, p. 3; *id. Cat.* no. 17 bis.

Cerchneis alaudarius, *Hume, S. F.* iv, p. 460.

Karontia, Koruttia, Khermutia, H. in the North; *Narzi* ♀, *Narzinak* ♂, H. in the South; *Tondala-muchi-gedda, Tondala-doshi-gadu,* Tel.: *Ting-kyi,* Lepcha; *Gyo-thane,* Burmese.

Coloration. Adult male. Forehead and lores yellowish white; crown, nape, and sides of neck ashy grey with narrow black shaft-lines; a dark grey cheek-stripe; ear-coverts and cheeks white to silvery grey with some darker streaks; back, scapulars, and wing-coverts brick-red with a vinous or pink tinge and with scattered triangular black spots; rump and upper tail-coverts ashy grey; tail-feathers the same above, whitish beneath, with a broad subterminal black band and white tips; quills dark brown, with bar-like white indentations on their inner webs, basal portion chiefly white; lower parts buff to rufous fawn, with brown streaks on the upper breast passing into spots on the lower breast and flanks; throat and lower abdomen unspotted; wing-lining white, with a few black spots.

Female. Rufous above varying in tint, with black streaks on the head and black transverse bands on the rest of the upper parts and on the tail; the latter has a broad subterminal black band, not so wide as in the male; quills and lower surface as in the male, but the spots on the breast are larger and more numerous. In old females the rump, upper tail-coverts, and tail are more or less tinged with bluish grey.

Young males are like females: the tail becomes bluish grey before the head does. Some males that appear perfectly adult have the head tinged with rufous.

In India and Burma, as in Africa, Kestrels that are resident are often darker in colour than migrants: the rufous above is deeper and the lower surface is brownish rufous. A Moulmein female of this kind was the type of Blyth's *T. saturatus.*

Bill bluish black; the gape, cere, and eyelids yellow; irides brown; legs orange-yellow, claws black.

Length of male about 14; tail 6·75; wing 9·5; tarsus 1·5; mid-toe 1; bill from gape ·85. The female is scarcely larger.

Distribution. The Kestrel breeds throughout the entire Palæarctic region, also in the Himalayas above 7000 feet, in South Afghanistan, and in several of the hill groups of Peninsular India, especially in all the higher parts of the Western Ghâts. It probably breeds in the hills of Burma also. From September till April it is commonly distributed all over the Indian Empire, the vast majority of these birds being migrants from the North. It migrates to Africa at the same time.

Habits, &c. The Kestrel is not often seen in forest; cultivated tracts and plains of grass are its principal haunts, and over these it may be seen beating, especially in the morning and evening, every now and then hovering with a quick motion of the wings above a spot where it has seen or suspects it has seen its prey, on which it drops quietly. From its characteristic method of hunting is derived the English name of "Windhover." It subsists on insects (especially locusts), lizards, frogs, and mice, rarely if ever touching birds. The nest of the Kestrel is placed on rocky ledges or small holes in cliffs, occasionally on ruins, more rarely on trees. The breeding-season in the North is from April to June, but earlier in Southern India, and the nest is of sticks with some grass-roots, rags, or feathers intermixed. Very often a deserted crow's or magpie's nest is utilized. From 3 to 6 eggs are laid, usually 4 or 5, broad oval, more or less pointed and compressed towards one end, brick to blood-red, mottled and blotched with a deeper colour, and measuring about 1·57 by 1·21.

1266. **Tinnunculus cenchris.** *The Lesser Kestrel.*

Falco cenchris, *Naumann, Vög. Deutschl.* i, p. 318, pl. 29 (1822).
Falco tinnunculoides, *Temm. Man. d'Orn.* 2^e éd. i, p. 31 (1820).
Tinnunculus cenchris, *Blyth, Cat.* p. 16; *Horsf. & M. Cat.* i, p. 14; *Salvin, Ibis*, 1874, p. 361 note; *Dresser, Ibis,* 1875, p. 515; *Gurney, Ibis*, 1881, p. 470.
Erythropus cenchris, *Jerdon, B. I.* i, p. 40; *id. Ibis,* 1871, p. 242; *Hume, Rough Notes*, p. 103; *Fairbank, S. F.* iv, p. 252.
Tichornis pekinensis, *Swinhoe, P. Z. S.* 1871, p. 341.
Cerchneis naumanni, *Sharpe, Cat. B. M.* i, p. 435; *Davidson & Wend. S. F.* vii, p. 73; *Hume, S. F.* vii, p. 331; *id. Cat.* no. 18; *Butler, S. F.* ix, p. 371; *Macgregor, S. F.* x, p. 435; *Barnes, Birds Bom.* p. 19.
Cerchneis pekinensis, *Sharpe, Cat. B. M.* i, p. 437; *Hume, S. F.* vii, p. 332; *id. Cat.* no. 18 bis; *Hume & Inglis, S. F.* ix, p. 242; *Barnes, Birds Bom.* p. 20; *Hume, S. F.* xi, p. 4.
Erythropus pekinensis, *A. Anderson, S. F.* iii, p. 384; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 192.
Tinnunculus pekinensis, *Brooks, J. A. S. B.* xliii, pt. 2, p. 239; *Hume & Inglis, S. F.* v, p. 5.
Cerchneis inglisi, *Hume, S. F.* v, p. 5 (1877); *id. Cat.* no. 18 ter.

Coloration. Adult male. Crown, nape, sides of head and neck, lower back, rump, and upper tail-coverts, together with the greater and median and sometimes parts of the smaller wing-coverts, ashy grey; ear-coverts whitish; back, scapulars, and a varying proportion of the smaller and median wing-coverts brick-red with a vinous tinge; quills black, their inner webs except near the tip white, as is the wing-lining; tail above grey like the rump, with a broad black subterminal band and a white tip, whitish beneath; lower surface of body pale to deep rufous, with small rounded black spots on the breast and flanks, these disappear gradually with age.

Female and young male similar to those of *T. alaudarius*, but easily distinguished by their pale whitish claws. The tail in young males becomes grey by moult before the head or wing-coverts assume the ashy colour.

Bill bluish horny, paler at the base; cere dark yellow, irides deep brown; legs and feet bright yellow, sometimes with an orange tinge; *claws whitish or yellowish horny.*

Length about 13; tail 5·75; wing 9; tarsus 1·2; mid-toe without claw ·9; bill from gape ·8. There appears to be no constant difference between the sexes in size.

The Chinese and Indian bird has been separated as *T. pekinensis* on account of having the wing-coverts chiefly grey instead of red. Gurney has, however, shown that the difference is not constant.

Dresser has clearly proved that the name *naumanni* has no claim to priority over *cenchris*.

Distribution. A migratory bird, passing the summer and breeding in Southern Europe, Western Asia, Persia, and China, and visiting Africa and India in the cold season. Blyth, however, said that it was met with in Bengal in the monsoon (probably September), and Jerdon that he found it breeding on the Nilgiris in May and June. Hume suspects that the Common Kestrel was mistaken for this species in the latter case. *T. cenchris* has been met with in many parts of India and as far East as Cachar and the Nága hills, but it has not yet been obtained in Burma nor has it been observed in Ceylon.

Habits, &c. Very similar to those of the Common Kestrel, but this species is more gregarious and more insectivorous. It has not been observed to nest in India with the exception of the doubtful case above mentioned.

Genus **MICROHIERAX**, Sharpe, 1874.

The pigmy Falcons, or Falconets as they have been termed, are not closely allied to Falcons nor to any other group. They are distinguished from all other Accipitrine birds by their mode of nidification, in which they resemble Owls, Parrots, Barbets, &c., for they lay white eggs in a hole hollowed in the trunk or branch of a tree. The eggs are moderately elongated ovals, fairly close in texture, without gloss, and are said by Hume to be unlike the eggs of any Accipitrine birds in shape and texture, apart from colour. The Falconets inhabit open parts of forests, and are usually seen perched on dead twigs or branches on tolerably high trees; from their perch they launch into the air in pursuit of their prey, principally insects, and then return to the same perch. They also at times kill small birds. Their flight is peculiar, not unlike that of *Artamus*, but their method of hawking insects resembles that of a Bee-eater.

The bill is rather large and compressed, the upper mandible strongly toothed on each side, in some individuals there is a second tooth behind the first. The wings are short and rounded, the first 3 quills not differing greatly in length, but usually the 2nd and 3rd are longer; tail rather long, square at the end; legs and feet stout, middle toe not elongate, lateral toes unequal; claws strong, very little curved. Sexes alike in plumage.

Key to the Species.

a. A broad white nuchal collar; thigh-coverts ferruginous	*M. eutolmus*, p. 432.
b. No white collar.	
a'. Thigh-coverts and lower surface throughout white	*M. melanoleucus*, p. 433.
b'. Thigh-coverts black	*M. fringillarius*, p. 434.

As every one of these species has been identified in turn with *Falco cœrulescens* of Linnæus, I think it best to follow Mr. Gurney's suggestion and not employ that name for any of them; the figure of Edwards on which it is founded cannot be satisfactorily referred to any one of the three.

1267. **Microhierax eutolmus.** *The Red-legged Falconet.*

Ierax bengalensis (*Brisson*), *apud Blyth, J. A. S. B.* xii, p. 180* (1843).
Hierax eutolmus *v.* bengalensis, *Hodgson in Gray's Zool. Misc.* p. 81 (1844), descr. nullâ.
Hierax eutolmus, *Blyth, Cat.* p. 17; *id. J. A. S. B.* xix, p. 324; *Horsf. & M. Cat.* i, p. 15; *Jerdon, B. I.* i, p. 42; *Hume, Rough Notes*, p. 111; *Blanf. Ibis*, 1870, p. 464; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 152; *Hume, S. F.* xi, p. 6.
Microhierax cærulescens (*Linn.*), *Sharpe, Cat. B. M.* i, p. 366; *Hume & Oates, S. F.* iii, p. 22; *Bingham, S. F.* v, p. 80; ix, p. 142; *Hume, S. F.* v. p. 126; *Hume & Dav. S. F.* vi, p. 3; *Hume, Cat.* no. 20; *Oates, B. B.* ii, p. 211; *id. in Hume's N. & E.* 2nd ed. iii, p. 183; *Salvad. Ann. Mus. Civ. Gen.* (2) v, p. 556.
Microhierax eutolmus, *Gurney, Ibis*, 1881, p. 272.

Ching-fin-nyel, Lepcha; *Doun-oo-hnouk*, Burmese.

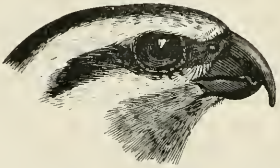

Fig. 101.—Head of *M. eutolmus*, $\frac{1}{1}$.

Coloration. Forehead, broad supercilia extending back to the sides of the neck, cheeks, and broad nuchal collar white; crown, nape, and all the upper plumage, with the wings and tail, black with a metallic green gloss; feathers round the orbit and a band running back from the eye and including the ear-coverts black; quills black, with broad white spots on the inner webs; all tail-feathers except the middle pair with white spots on the inner webs, and when freshly moulted narrow white tips confined to the inner webs; lower parts white, more or less tinged with ferruginous, always deeply ferruginous on the chin, throat, thighs, lower abdomen, and under tail-coverts; sides of the body black; wing-lining white.

Young birds have the black of the upper parts less glossy, the frontal band and supercilia chestnut, the chin and throat white, and the nuchal collar inconspicuous.

Bill slaty blue, nearly black at the tip; cere dark brown, irides hazel-brown; eyelids plumbeous; legs plumbeous brown, claws black.

Length of female 7; tail 2·6; wing 4·25; tarsus ·9; mid-toe without claw ·72; bill from gape ·55: of male, length 6·25; wing 3·8.

Distribution. The Himalayas below about 7000 feet elevation from Garhwál to Bhután, and on the Gáro hills, but not in the ranges around Upper Assam, where *M. melanoleucus* is found. The present form occurs throughout Burma, in Siam and Cambodia.

Habits, &c. Those of the genus. The eggs, four in number, were taken by Col. Bingham from a nest-hole in a tree on April 14th near Pahpoon, Tenasserim. They are white and measure 1·2 by ·87. The only lining to the nest-hole was a pad of insects' wings mixed with rotten wood.

This Falconet is said to have been formerly trained to capture small birds.

1268. **Microhierax melanoleucus.** *The White-legged Falconet.*

Ierax cærulescens, *apud Blyth, J. A. S. B.* xi, p. 789; *nec Linn.*
Ierax melanoleucos, *Blyth, J. A. S. B.* xii, p. 179*.
Hierax melanoleucus, *Blyth, Cat.* p. 17; *id. Ibis,* 1863, p. 10; 1865, p. 29; *Horsf. & M. Cat.* i, p. 16; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 265; xlv, pt. 2, p. 66; *Hume, S. F.* xi, p. 6.
Microhierax melanoleucus, *Sharpe, Cat. B. M.* i, p. 368; *Hume, S. F.* ii, p. 525; v, p. 126; *id. Cat.* no. 20 bis; *Hartert, J. f. O.* 1889, p. 432.

This species is rather larger than the last, from which it differs in wanting the white nuchal collar and in being pure white beneath throughout; the white frontal band is very narrow or wanting, the supercilia are also narrower, and the black bands from the eye broader than in *M. eutolmus.* The white bars on the inner webs of the quills are also narrower.

Bill and feet black; iris brown (*Hartert*).

Length about 7·5; tail 3; wing 4·5; tarsus 1·1; bill from gape ·55.

Distribution. Upper Assam, the Daphla and other hills to the northward, and the Nága hills to the southward. A specimen was obtained by Godwin-Austen from Lukhipur, Cachar, but none was seen by Hume in Manipur.

1269. **Microhierax fringillarius.** *The Black-legged Falconet.*

Falco fringillarius, *Drap. Dict. Class. d'Hist. Nat.* vi, p. 412, pl. v (1824).

Hierax cærulescens (*L.*), *apud Vigors, Zool. Jour.* i, p. 339 (1824); *Blyth, J. A. S. B.* xii, p. 180*; *Horsf. & M. Cat.* i, p. 15; *Sclater, P. Z. S.* 1863, p. 206.

Hierax fringillarius, *Blyth, Cat.* p. 17; *id. Ibis,* 1863, p. 11; *Stoliczka, J. A. S. B.* xxxix, pt. 2, p. 281; *Walden, Ibis,* 1871, p. 161; *Blyth & Wald. Birds Burm.* p. 60.

Microhierax fringillarius, *Sharpe, Cat. B. M.* i, p. 367; *Davison, S. F.* v, p. 80; *Hume & Dav. S. F.* vi, p. 5; *Hume, Cat.* no. 20 ter; *Oates, B. B.* ii, p. 212; *id. in Hume's N. & E.* 2nd ed. iii, p. 183.

Coloration. Upper parts, wings, and tail black, glossed with metallic green; no white collar; frontal and superciliary bands white, but much narrower than in *M. eutolmus*, and the black band from the eye broader; quills and all tail-feathers, except the middle pair, with white spots on the inner webs; lower parts white, more or less tinged with ferruginous red; flanks and thigh-coverts black.

Bill, legs, and feet black; irides wood-brown; orbital skin plumbeous (*Davison*).

Length of female 6·5; tail 2·25; wing 4; tarsus ·75; bill from gape ·55: a male measures—length 6, wing 3·7.

Distribution. The southern portion of Tenasserim as far north as 14° N. lat.; also the Malay Peninsula, Cochin China, Sumatra, Borneo, and Java.

Habits, &c. Similar to those of other species, but this, although smaller, is said to feed more on birds. It also lays white eggs in holes in trees.

M. latifrons, Sharpe (Ibis, 1879, p. 237, pl. vii), which is very similar to *M. fringillarius*, but is distinguished by having the crown white, and a black line through the eye to the nape separating the white crown from the white sides of the head, is said to have been obtained from the Nicobars, the types being from Borneo. Although the Nicobar locality rests on fairly good authority (see S. F. viii, p. 496, and Ibis, 1881, p. 274), the name of the discoverer is not known, and as the evidence is at second-hand, I do not think it wise to admit the species without clearer proof.

Genus **POLIOHIERAX**, Kaup, 1847.

Plumage very soft. Bill small, strongly toothed; tarsus naked, almost throughout covered with rather large polygonal scales in front, and smaller behind; toes weak and short, claws very little curved. Wing short and rounded; tail almost as long as the wing, and greatly graduated, the outer tail-feathers in the Burmese species being short of the middle rectrices by nearly one-third the length of the tail. Sexes dissimilar in plumage.

There are only two species of *Poliohierax*; one inhabits Africa, the other Burma. The affinities of the genus are very obscure.

1270. **Poliohierax insignis.** *Feilden's Hawk.*

Poliohierax insignis, *Walden, P. Z. S.* 1871, p. 627; *id. Ibis*, 1872, p. 471; *Sharpe, Cat. B. M.* i, p. 370; *Sclater, S. F.* iii, p. 417; *Blyth, Birds Burm.* p. 59; *Wardl. Rams. Ibis*, 1877, p. 454; *Hume & Dav. S. F.* vi, p. 2; *Tweedd. in Rowley's Orn. Misc.* iii, p. 169, pl.; *Hume, Cat.* no. 16 bis; *Oates, B. B.* ii, p. 213.
Lithofalco feildeni, *Hume, P. A. S. B.* 1872, p. 70.
Polihierax feildeni, *Hume & Oates, S. F.* iii, p. 19.

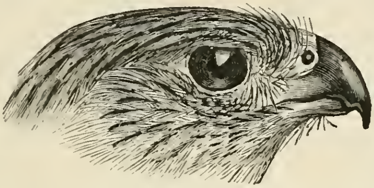

Fig. 102.—Head of *P. insignis*, 1/1.

Coloration. Male. Crown, nape, and sides of head and neck light grey, with narrow black shaft-stripes; ear-coverts paler and silky; back, scapulars, and wing-coverts blackish grey; rump and upper tail-coverts white; quills black, with large white spots on their inner webs, larger towards the base; middle pair of tail-feathers black throughout, all the others broadly barred black and white and tipped white; lower parts white.

Female. Head and nape above and at the sides chestnut; frontal band, narrow supercilium, and area below the eye grey with black streaks; remainder of plumage as in the male.

Young birds have the head and back brownish grey with dark shaft-stripes; the quills and tail dark brown, marked as in adults, except that there are a few round white spots on the middle pair of rectrices; lower parts pale rufous, with long brown shaft-stripes on the breast and upper abdomen. Some of the immature markings, such as a few streaks on the breast and white spots on the median rectrices, are sometimes retained by birds in adult plumage.

Anterior portion of bill bluish black; cere, gape, and both mandibles as far as the nostrils orange-yellow; eyelids and orbital skin orange; irides brown; legs orange; claws black (*Oates*).

Length of male 10·5 inches; tail 5; wing 5·5; tarsus 1·4; mid-toe without claw ·9; bill from gape ·75: of a female, length 11, wing 6.

Distribution. This curious Hawk has been found in Burma around Thayet Myo, where it is not rare, at Toungngoo, in Northern Tenasserim near Myawadee, and in the Thoungyin valley. The only other recorded locality is Western Siam.

Habits, &c. An excellent account has been given by Feilden, who discovered this bird at very nearly the same time as Wardlaw Ramsay. The flight is peculiar and jerky, and the movements resemble those of a Magpie. This species frequents dry open forest or scrub, perching on dead trees by preference, and feeding chiefly on insects, with an occasional mouse, snake, or lizard. The breeding-season is about March; the eggs are unknown, but Col. Bingham tells me that he has found the nest, which is built of sticks and placed in a tree.

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